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Jan 17

CATALOGUE

OF THE

FRESH-WATER FISHES OF AFRICA

IN THE

BRITISH MUSEUM

(NATURAL HISTORY).

VOLUME IV.

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BY

GEORGE ALBERT BOULENGER, F.R.S.

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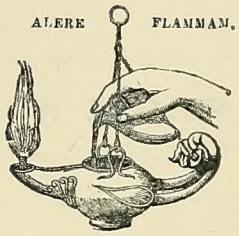

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PREFACE.

THE scope of Volume IV. of the present Catalogue is in accordance with the anticipation expressed in the Preface and Introduction of its predecessor. Three Suborders are first considered, namely: the Acanthopterygii, eight Families of which were dealt with in Volume III.; the Opisthomi, represented by the Mastacembelidæ; and the Plectognathi, similarly including only one Family, the Tetrodontidæ. The subject is then continued by an account of *addenda* to the previous volumes. The danger of overlooking these has been minimised by the preparation of a general systematic index to the four volumes, in which the author has placed the new species in what he regards as their proper position in his system.

Mr. Boulenger's account of the Fresh-water Fishes of Africa is thus brought to a conclusion. While recognising fully the value of the services rendered by the collectors and donors of unique material preserved in the Museum, and particularly by those mentioned in the Introduction, it is impossible to overlook the fact that the principal stimulus leading to the acquisition of the collection has been the author's own enthusiasm and unrivalled knowledge of the subject of this work.

SIDNEY F. HARMER,
Keeper of Zoology.

BRITISH MUSEUM (NATURAL HISTORY),
LONDON.
January, 1916.

INTRODUCTION.

This fourth volume, which concludes the 'Catalogue of the Fresh-water Fishes of Africa,' contains the last families of Acanthopterygii and the Opisthomi and Plectognathi (135 species, 1390 specimens), an Appendix dealing with the additions to the literature and the collection since the publication of the preceding volumes (issued in 1909, 1911, and 1915, respectively), and Indexes to the whole work.

The collection, the arrangement of which is now completed, is certainly the largest ever brought together and described from the fresh waters of any part of the world, comprising as it does over 15,000 specimens, or more than one-half of the total number of Fishes in the British Museum at the conclusion of Dr. Günther's Catalogue in 1870. At that date—a land-mark in the history of systematic Ichthyology—very little was known of the fresh-water fishes of Africa, and even ten years later, in his 'Study of Fishes,' Dr. Günther assessed the number of species then known at 255 only, intentionally omitting a few forms such as occur also in the sea (the *Anguillidæ* and *Mugilidæ*, for instance). In a list compiled by me ten years ago, the number of species was estimated at 974. 1425 are described in the present work.

In addition to the 15,000 specimens in the Museum, it has been my privilege to examine a nearly equal number, principally from the Nile Survey, the Congo (Tervueren), Genoa, Paris, S. African, and Luxemburg Museums, and the collections made by the late Dr. W. J. Ansorge, who, up to the time of his death two years ago, had been most energetic in exploring various rivers of West Africa, from Portuguese Guinea to Angola, and who, within the last fifteen years, on his own initiative, has done more than any other collector for the increase of our knowledge of African Fishes. Next in importance, and in addition to those mentioned in the 'Fishes of the Nile' and in the Introduction

to the first volume of this Catalogue, are the collections made by Mr. G. L. Bates (Cameroon), Dr. E. Bayon (Uganda), Major G. E. Bruce (Transvaal and Lagos), Dr. C. Christy (Congo), Mr. T. Codrington (Zambesi), Capt. R. D. Gard'ner (Nigeria), Mr. S. L. Hinde (Kenya district of E. Africa), Mr. W. P. Lowe (Liberia), M. E. Luja (Congo), Mr. F. H. Melland (Lake Bangwelu), Mr. A. Blayney Percival (British E. Africa), Capt. E. L. Rhoades (Lake Nyassa), Dr. H. G. F. Spurrell (Gold Coast), Dr. L. Stappers (Lakes Tanganyika and Mweru), Mr. N. W. Thomas (Sierra Leone), and the late Mr. R. B. Woosnam (Ruwenzori and Lake Ngami Basin).

Numerous new Cyprinids have recently been added to the fauna of South Africa by Dr. J. D. F. Gilchrist and Mr. W. Wardlaw Thompson, and most of the figures which accompany their descriptions in the 'Annals of the South African Museum' have been reproduced in the Appendix to Vols. I. and II., by the kind permission of the Director of the South African Museum, Dr. L. Péringuey.

G. A. BOULENGER.

Zoological Department,
British Museum,
20th November, 1915.

SYSTEMATIC INDEX

TO THE FOUR VOLUMES.

Subclass **SELACHII.**

Ord. I. PLAGIOSTOMI.

Subord. I. PLEUROTREMI.

Fam. 1. CARCHARIIDÆ.

	Volume I. Page	IV. Page
1. Carcharias, *Cuv.*	2	
1. zambesensis, *Peters* ..	2	

Subord. II. HYPOTREMI.

Fam. 1. PRISTIDÆ.

1. Pristis, *Lath.*	3	
1. perroteti, *M. & H.*....	3	149

Subclass **TELEOSTOMI.**

Ord. I. CROSSOPTERYGII.

Subord. I. CLADISTIA.

Fam. 1. POLYPTERIDÆ.

1. Polypterus, *Geoffr.*	5	
1. bichir, *Geoffr.*.....	6	149
2. lapradii, *Stdr.*	7	149
2 *a.* ansorgii, *Blgr.*..... ..		149
3. congicus, *Blgr.*	9	
4. endlicheri, *Heck.*	10	150
5. weeksii, *Blgr.*.....	11	
6. ornatipinnis, *Blgr.* ..	12	
7. delhezi, *Blgr.*.....	13	
8. senegalus, *Cuv.*	14	150
9. palmas, *Ayres*.....	16	150

	Volume I. Page	IV. Page
1. Polypterus (*con.*).		
9 *a.* lowei, *Blgr.*..... ..		151
10. retropinnis, *Vaill.*....	17	
2. Calamichthys, *J. A. Smith*..	17	
1. calabaricus, *J. A. Smith.*	18	151

Ord. II. DIPNEUSTI.

Fam. 1. LEPIDOSIRENIDÆ.

1. Protopterus, *Owen*.....	19	
1. annectens, *Owen*	20	151
2. æthiopicus, *Heck.*	21	152
3. dolloi, *Blgr.*	22	152

Ord. III. TELEOSTEI.

Subord. I. MALACOPTERYGII.

Fam. 1. ELOPIDÆ.

1. Elops, *L.*	25	
1. saurus, *L.*	25	152
2. lacerta, *C. & V.*.....	26	152
2. Megalops, *Lacep.*	27	
1. cyprinoides, *Brouss.* ..	28	

Fam. 2. MORMYRIDÆ.

1. Mormyrops, *J. Müll.*.....	30	
1. deliciosus, *Leach*	32	152
1 *a.* citernii, *Vincig.*		153
2. anguilloides, *L.*	34	
3. longiceps, *Gthr.*.....	35	
4. breviceps, *Stdr.*.....	36	153
5. engystoma, *Blgr.*	36	153
6. parvus, *Blgr.*	37	

	Volume I. Page	IV. Page
1. Mormyrops (*con.*).		
7. masuianus, *Blgr.*	38	
7 *a*. batesianus, *Blgr.*	153	
8. sirenoides, *Blgr.*	39	
9. zanclirostris, *Gthr.*	40	154
10. boulengeri, *Pellegr.*	40	154
11. curtus, *Blgr.*	41	
12. lineolatus, *Blgr.*	42	
13. nigricans, *Blgr.*	43	
14. microstoma, *Blgr.*	44	
15. mariæ, *Schilth.*	44	
16. attenuatus, *Blgr.*	45	
17. furcidens, *Pellegr.*	46	
2. Petrocephalus, *Marcus.*	47	
1. bane, *Lacep.*	48	154
2. sauvagii, *Blgr.*	49	154
3. ansorgii, *Blgr.*	51	154
4. ballayi, *Sauv.*	52	154
4 *a*. microphthalmus, *Pellegr.*		155
5. simus, *Sauv.*	53	155
5 *a*. cunganus, *Blgr.*		155
6. bovei, *C. & V.*	54	
7. keatingii, *Blgr.*	55	
8. stuhlmanni, *Blgr.*	56	156
8 *a*. haullevillii, *Blgr.*		157
9. catostoma, *Gthr.*	57	
10. gliroides, *Vincig.*	58	
11. degeni, *Blgr.*	58	
3. Isichthys, *Gill.*	59	
1. henryi, *Gill.*	59	157
4. Marcusenius, *Gill.*	60	
1. nigripinnis, *Blgr.*	63	
2. pulverulentus, *Blgr.*	63	
3. marchii, *Sauv.*	64	
4. kingsleyæ, *Gthr.*	65	158
5. sphecodes, *Sauv.*	66	
5 *a*. pappenheimi, *Blgr.*		158
6. brachistius, *Gill.*	67	158
7. longianalis, *Blgr.*	69	159
8. lhuysii, *Stdr.*	70	
8 *a*. castelnaui, *Blgr.*		159
8 *b*. brevis, *Blgr.*		160
9. adspersus, *Gthr.*	70	
9 *a*. hutereaui, *Blgr.*		160
10. weeksii, *Blgr.*	71	

	Volume I. Page	IV. Page
4. Marcusenius (*con.*).		
11. batesii, *Blgr.*	72	
12. ansorgii, *Blgr.*	73	161
13. pauciradiatus, *Stdr.*	75	161
14. nigricans, *Blgr.*	75	161
15. isidori, *C. & V.*	75	161
15 *a*. gaillardi, *Pellegr.*		161
16. castor, *Pappenh.*	77	
17. harringtoni, *Blgr.*	78	
18. tumifrons, *Blgr.*	79	
19. plagiostomus, *Blgr.*	80	
20. discorhynchus, *Peters.*	81	162
21. petherici, *Blgr.*	82	162
22. budgetti, *Blgr.*	83	
23. macrops, *Blgr.*	84	
24. psittacus, *Blgr.*	85	
25. wilwerthi, *Blgr.*	86	
5. Stomatorhinus, *Blgr.*	87	
1. puncticulatus, *Blgr.*	88	162
2. walkeri, *Gthr*	88	
3. humilior, *Blgr.*	89	
4. corneti, *Blgr.*	90	
5. polylepis, *Blgr.*	91	
6. microps, *Blgr.*	92	162
6. Myomyrus, *Blgr.*	92	
1. macrodon, *Blgr.*	93	
1 *a*. macrops, *Blgr.*		162
7. Gnathonemus, *Gill.*	94	
1. moorii, *Gthr.*	96	163
2. lambouri, *Pellegr.*	97	
3. schilthuisiæ, *Blgr.*	98	
4. petersii, *Gthr.*	99	164
5. longibarbis, *Hilg.*	100	164
6. niger, *Gthr.*	101	
7. leopoldianus, *Blgr.*	102	164
8. friteli, *Pellegr.*	103	
9. bentleyi, *Blgr.*	103	
10. livingstonii, *Blgr.*	104	
11. bruyerii, *Pellegr.*	105	
12. monteiri, *Gthr.*	105	164
13. mento, *Blgr.*	106	164
13 *a*. thomasi, *Blgr.*		164
14. stanleyanus, *Blgr.*	107	165
15. senegalensis, *Stdr.*	108	165
16. angolensis, *Blgr.*	109	165
16 *a*. brucii, *Blgr.*		166

	Volume I. Page	IV. Page
7. Gnathonemus (*con.*).		
17. cyprinoides, *L.*	110	167
18. macrolepidotus, *Peters*	112	167
19. pictus, *Marcus.*	112	
20. gilli, *Blgr.*	114	
21. kutuensis, *Blgr.*	115	
22. ussheri, *Gthr.*	116	
23. greshoffi, *Schilth.*	117	
24. abadii, *Blgr.*	118	
25. tamandua, *Gthr.*	118	167
26. mirus, *Blgr.*	119	167
27. elephas, *Blgr.*	120	
28. rhynchophorus, *Blgr.*	121	
29. ibis, *Blgr.*	122	
30. curvirostris, *Blgr.*	123	
31. numenius, *Blgr.*	124	
8. Genyomyrus, *Blgr.*	125	
1. donnyi, *Blgr.*	125	167
9. Mormyrus, *L.*	126	
1. hasselquistii, *C. & V.*	128	167
2. anchietæ, *Guim.*	129	167
2 *a.* ellenbergeri, *Pellegr.*		167
3. macrophthalmus, *Gthr.*	130	
3 *a.* bumbanus, *Blgr.*		168
4. ovis, *Blgr.*	131	
5. caballus, *Blgr.*	132	
6. tapirus, *Pappenh.*	133	
7. tenuirostris, *Peters*	134	
8. kannume, *Forsk.*	134	169
9. caschive, *L.*	136	
10. niloticus, *Bl.-Schn.*	137	
11. bozasi, *Pellegr.*	138	
12. longirostris, *Peters*	139	169
13. rume, *C. & V.*	140	169
14. proboscirostris, *Blgr.*	141	
10. Hyperopisus, *Gill*	142	
1. bebe, *Lacep.*	142	170
1 *a.* tenuicauda, *Pellegr.*		170
11. Gymnarchus, *Cuv.*	144	
1. niloticus, *Cuv.*	144	170
Fam. 3. Notopteridæ.		
1. Notopterus, *Lacep.*	146	
1. afer, *Gthr.*	146	170
2. Xenomystus, *Gthr.*	147	
1. nigri, *Gthr.*	147	170
Fam. 4. Osteoglossidæ.		
1. Heterotis, *Ehrenb.*	149	
1. niloticus, *Ehrenb.*	149	171
Fam. 5. Pantodontidæ.		
1. Pantodon, *Peters*	151	
1. buchholzi, *Peters*	151	171
Fam. 6. Clupeidæ.		
1. Clupea, *L.*	153	
1. finta, *Cuv.*	154	
2. Pellonula, *Gthr.*	155	
1. vorax, *Gthr.*	156	171
1 *a.* leonensis, *Blgr.*		172
2. miodon, *Blgr.*	157	
3. obtusirostris, *Blgr.*	158	
4. acutirostris, *Blgr.*	159	
3. Odaxothrissa, *Blgr.*	160	
1. losera, *Blgr.*	160	
1 *a.* ansorgii, *Blgr.*		172
4. Microthrissa, *Blgr.*	161	
1. royauxi, *Blgr.*	161	
5. Ilisha, *Gray*	162	
1. indica, *Swains.*	163	
6. Chanos, *Lacep.*	164	
1. salmoneus, *Forst.*	164	
Fam. 7. Salmonidæ.		
1. Salmo, *Art.*	166	
1. trutta, *L.*	166	
Fam. 8. Phractolæmidæ.		
1. Phractolæmus, *Blgr.*	168	
1. ansorgii, *Blgr.*	168	
Fam. 9. Kneriidæ.		
1. Kneria, *Stdr.*	169	
1. angolensis, *Stdr.*	170	173
2. spekii, *Gthr.*	171	174
3. cameronensis, *Blgr.*	171	174
2. Xenopomatichthys, *Pellegr.*	172	
1. auriculatus, *Pellegr.*	172	174
1 *a.* ansorgii, *Blgr.*		174

	Volume I. Page	IV. Page
Fam. 10. Cromeriidæ.		
1. Cromeria, *Blgr.*	173	
1. nilotica, *Blgr.*	173	175
Subord. II. Ostariophysi.		
Fam. 1. Characinidæ.		
1. Sarcodaces, *Gthr.*	177	
1. odoë, *Bl.*	177	175
2. Hydrocyon, *Cuv.*	179	
1. forskalii, *Cuv.*	180	175
2. lineatus, *Blkr.*	182	176
3. vittiger, *Blgr.*	184	
4. goliath, *Blgr.*	184	
5. brevis, *Gthr.*	186	176
3. Bryconæthiops, *Gthr.*	187	
1. microstoma, *Gthr.*	188	176
2. yseuxi, *Blgr.*	189	176
4. Alestes, *M. & T.*	190	
1. dentex, *L.*	193	176
2. baremose, *Joann.*	195	176
3. macrophthalmus, *Gthr.*	197	176
3 *a.* ansorgii, *Blgr.*		176
4. liebrechtsii, *Blgr.*	198	
5. stuhlmanni, *Pfeff.*	199	
6. sadleri, *Blgr.*	200	178
7. tholloni, *Pellegr.*	201	
7 *a.* tessmanni, *Pappenh.*		178
8. intermedius, *Blgr.*	201	178
9. longipinnis, *Gthr.*	202	178
10. chaperi, *Sauv.*	203	179
11. lateralis, *Blgr.*	204	179
12. nurse, *Rüpp.*	205	179
13. affinis, *Gthr.*	208	180
13 *a.* jacksonii, *Blgr.*		180
14. imberi, *Peters*	209	181
15. humilis, *Blgr.*	211	
16. kingsleyæ, *Gthr.*	212	181
16 *a.* rutilus, *Blgr.*		181
17. bimaculatus, *Blgr.*	213	
18. tæniurus, *Gthr.*	214	
19. opisthotænia, *Blgr.*	215	182
20. poptæ, *Pellegr.*	216	
20 *a.* schoutedeni, *Blgr.*		182
21. macrolepidotus, *C. & V.*	217	184
22. rhodopleura, *Blgr.*	218	
23. grandisquamis, *Blgr.*	220	
24. batesii, *Blgr.*	221	184
25. brevis, *Blgr.*	222	
5. Micralestes, *Blgr.*	223	
1. acutidens, *Peters*	224	184
2. stormsi, *Blgr.*	225	
3. humilis, *Blgr.*	226	184
4. holargyreus, *Gthr.*	227	184
5. urotænia, *Blgr.*	228	
6. interruptus, *Blgr.*	229	
7. altus, *Blgr.*	230	184
6. Petersius, *Hilg.*	231	
1. modestus, *Blgr.*	232	
2. hilgendorfi, *Blgr.*	232	185
2 *a.* ansorgii, *Blgr.*		185
2 *b.* ubalo, *Blgr.*		186
3. conserialis, *Hilg.*	233	
4. tangensis, *Lönnb.*	234	
5. leopoldianus, *Blgr.*	235	
6. brumpti, *Pellegr.*	235	
7. caudalis, *Blgr.*	236	
7 *a.* septentrionalis, *Blgr.*		187
8. pulcher, *Blgr.*	237	187
9. major, *Blgr.*	237	187
10. spilopterus, *Blgr.*	239	187
11. woosnami, *Blgr.*	239	
12. occidentalis, *Gthr.*	240	
7. Eugnathichthys, *Blgr.*	241	
1. eetveldii, *Blgr.*	241	188
2. macroterolepis, *Blgr.*	243	188
8. Paraphago, *Blgr.*	244	
1. rostratus, *Blgr.*	244	
9. Mesoborus, *Pellegr.*	245	
1. crocodilus, *Pellegr.*	245	
1 *a.* pellegrini, *Blgr.*		188
10. Phago, *Gthr.*	246	
1. loricatus, *Gthr.*	247	189
2. intermedius, *Blgr.*	247	
3. boulengeri, *Schilth.*	248	189
11. Neoborus, *Blgr.*	249	
1. ornatus, *Blgr.*	250	189
2. quadrilineatus, *Pellegr.*	251	189
12. Ichthyoborus, *Gthr.*	251	
1. besse, *Joann.*	251	189

	Volume I. Page	IV. Page
13. Hemistichodus, *Pellegr.* ..	253	
1. vaillanti, *Pellegr.*	253	
14. Nannæthiops, *Gthr.*.	254	
1. unitæniatus, *Gthr.* ..	254	190
1 *a.* tritæniatus, *Blgr.*		190
15. Neolebias, *Stdr.*	256	
1. unifasciatus, *Stdr.* ..	256	
2. trilineatus, *Blgr.*	257	
2 *a.* ansorgii, *Blgr.*		191
2 *b.* spilotænia, *Blgr.*		192
16. Distichodus, *M. & T.*	258	
1. affinis, *Gthr.*.....	260	192
2. altus, *Blgr.*	261	193
3. noboli, *Blgr.*.....	262	
4. notospilus, *Gthr.*	262	193
5. hypostomatus, *Pellegr.*	264	193
6. maculatus, *Blgr.*	264	193
7. petersii, *Pfeff.*	265	
8. antonii, *Schilth.*	266	
9. atroventralis, *Blgr.*..	267	
10. mossambicus, *Peters*..	268	193
11. fasciolatus, *Blgr.*....	270	193
12. engycephalus, *Gthr.*..	271	193
13. brevipinnis, *Gthr.* ..	272	193
14. niloticus, *L.*.....	273	
15. rostratus, *Gthr.*	275	194
16. sexfasciatus, *Blgr.* ..	276	
17. lusosso, *Schilth.*	277	194
17 *a.* ansorgii, *Blgr.*		194
17. Nannocharax, *Gthr.*	279	
1. brevis, *Blgr.*.....	280	
2. parvus, *Pellegr.*	281	195
3. fasciatus, *Gthr.*	281	195
4. intermedius, *Blgr.* ..	282	195
5. niloticus, *Joann.*	283	
6. elongatus, *Blgr.*	284	
7. ocellicauda, *Blgr.*....	285	
8. tænia, *Blgr.*.....	286	195
8 *a.* ansorgii, *Blgr.*		195
9. dimidiatus, *Pellegr.* ..	286	
9 *a.* ogoensis, *Pellegr.*		196
18. Xenocharax, *Gthr.*	287	
1. spilurus, *Gthr.*.....	287	197
2. crassus, *Pellegr.*	288	
19. Citharidium, *Blgr.*	289	

	Volume I. Page	IV. Page
19. Citharidium (*con.*).		
1. ansorgii, *Blgr.*	289	
20. Citharinus, *Cuv.*	290	
1. citharus, *Geoffr.*	291	197
2. congicus, *Blgr.*.....	293	197
3. macrolepis, *Blgr.*....	294	
4. latus, *M. & T.*	295	197
5. gibbosus, *Blgr.*.....	297	197

Fam. 2. CYPRINIDÆ.

1. Labeo, *Cuv.*	300	
1. niloticus, *Forsk.*	304	
2. horie, *Heck.*	306	
3. senegalensis, *C. & V.*	308	198
4. altivelis, *Peters*.....	309	198
5. weeksii, *Blgr.*	310	198
5 *a.* boulengeri, *Vincig.* . ..		198
6. lineatus, *Blgr.*.....	311	198
7. rosæ, *Stdr.*	312	199
8. mesops, *Gthr.*	313	
9. ruddi, *Blgr.*	314	199
9 *a.* stictolepis, *Vincig.* . ..		199
10. velifer, *Blgr.*	315	
11. longipinnis, *Blgr.* ..	316	199
12. coubie, *Rüpp.*	317	199
12 *a.* rubropunctatus, *Gilchr. & Thomps.*. ..		199
13. congoro, *Peters*.....	319	
14. neumanni, *Blgr.*	320	
14 *a.* percivali, *Blgr.*		201
15. gregorii, *Gthr.*	321	
16. darlingi, *Blgr.*	321	
17. victorianus, *Blgr.*....	322	202
18. fuellebornii, *Hilg. & Pappenh.*.....	323	
19. brachypoma, *Gthr.* ..	324	
20. macrostoma, *Blgr.* ..	325	
21. cyclorhynchus, *Blgr.* .	326	
21 *a.* batesii, *Blgr.*..... ..		202
22. falcipinnis, *Blgr.*....	327	
23. kirkii, *Blgr.*	328	
24. forskalii, *Rüpp.*	329	
24 *a.* rocadasi, *Blgr.*		203
24 *b.* bottegi, *Vincig.*.... ..		204
25. cylindricus, *Peters* ..	331	204
26. nasus, *Blgr.*.....	333	

	Volume I. Page	IV. Page
1. Labeo (*con.*).		
27. greenii, *Blgr.*	334	205
28. lukulæ, *Blgr.*	335	205
29. annectens, *Blgr.*	336	205
29 *a*. parvulus, *Gilchr. & Thomps.*	..	205
30. chariensis, *Pellegr.*	337	206
31. parvus, *Blgr.*	337	
32. obscurus, *Pellegr.*	338	207
32 *a*. ogunensis, *Blgr.*	..	207
33. umbratus, *A. Smith*	339	208
33 *a*. stenningi, *Gilchr. & Thomps.*	..	208
34. capensis, *A. Smith*	340	209
34 *a*. rubromaculatus, *Gilchr. & Thomps.*	..	209
35. ansorgii, *Blgr.*	341	210
35 *a*. nigricans, *Blgr.*	..	210
36. barbatus, *Blgr.*	342	
36 *a*. seeberi, *Gilchr. & Thomps.*	..	211
2. Discognathus, *Heck.*	343	
1. dembeensis, *Rüpp.*	345	212
2. johnstonii, *Blgr.*	346	
3. vinciguerræ, *Blgr.*	347	
4. makiensis, *Blgr.*	348	
5. blanfordii, *Blgr.*	349	
6. hindii, *Blgr.*	350	212
7. quadrimaculatus, *Rüpp.*	351	
3. Varicorhinus, *Rüpp.*	352	212
1. ansorgii, *Blgr.*	353	
2. brucii, *Blgr.*	354	214
2 *a*. ensifer, *Blgr.*	..	214
2 *b*. stenostoma, *Blgr.*	..	215
2 *c*. varicostoma, *Blgr.*	..	216
3. tornieri, *Stdr.*	355	
3 *a*. sandersi, *Blgr.*	..	217
3 *b*. steindachneri, *Blgr.*	..	218
3 *c*. ruandæ, *Pappenh.*	..	219
4. beso, *Rüpp.*	356	
4 *a*. platystoma, *Pappenh.*	..	220
4 *b*. latirostris, *Blgr.*	..	220
4 *c*. neelspruitensis, *Gilchr. & Thomps.*	..	221
4 *d*. ruwenzorii, *Pellegr.*	..	222

	Volume I. Page	IV. Page
3. Varicorhinus (*con.*).		
5. maroccanus, *Gthr.*	357	
6. tanganicæ, *Blgr.*	358	

	Volume II.	IV.
4. Barbus, *Cuv.*	1	
1. tropidolepis, *Blgr.*	20	
2. polylepis, *Blgr.*	21	
3. holubi, *Stdr.*	22	223
4. microterolepis, *Blgr.*	23	
5. macronema, *Blgr.*	24	
6. rueppelli, *Blgr.*	25	
7. bynni, *Forsk.*	26	
8. ruspolii, *Vincig.*	28	
8 *a*. ensis, *Blgr.*	..	223
9. erlangeri, *Blgr.*	29	224
10. kassamensis, *Blgr.*	30	
11. duchesnii, *Blgr.*	31	224
11 *a*. rocadasi, *Blgr.*	..	224
11 *b*. gulielmi, *Blgr.*	..	224
12. occidentalis, *Blgr.*	32	
13. lobogenys, *Blgr.*	33	
13 *a*. kivuensis, *Pappenh.*	..	226
14. radcliffii, *Blgr.*	34	226
15. marequensis, *A. Smith*	36	
15 *a*. kimberleyensis, *Gilchr. & Thomps.*	..	226
15 *b*. mentalis, *Gilchr. & Thomps.*	..	227
15 *c*. mfongosi, *Gilchr. & Thomps.*	..	228
16. altianalis *Blgr.*	36	
17. gananensis, *Vincig.*	37	
18. oreas, *Blgr.*	38	229
19. margaritæ, *Blgr.*	39	
20. gudaricus, *Blgr.*	40	
20 *a*. somereni, *Blgr.*	..	229
21. mento, *Blgr.*	41	
22. reinii, *Gthr.*	42	
23. batesii, *Blgr.*	43	
24. eumystus, *Blgr.*	44	
25. gregorii, *Blgr.*	45	230
26. hursensis, *Blgr.*	46	
27. affinis, *Rüpp.*	47	
28. brevibarbis, *Blgr.*	49	
29. leptosoma, *Blgr.*	50	

4. Barbus (*con.*).	Volume II. Page	IV. Page
30. degeni, *Blgr.*	50	
31. nedgia, *Rüpp.*	51	
32. compinei, *Sauv.*	53	
33. linnelli, *Lönnb.*	53	
33 *a.* ruasæ, *Pappenh.*	..	230
34. krapfi, *Blgr.*	54	231
34 *a.* ahlselli, *Lönnb.*	..	231
34 *b.* mawambiensis, *Stdr.*	..	231
34 *c.* cardozoi, *Blgr.*	..	232
34 *d.* roylii, *Blgr.*	..	233
35. labiatus, *Blgr.*	55	
36. alticola, *Blgr.*	55	
37. hindii, *Blgr.*	56	234
38. tanensis, *Gthr.*	58	
39. fergussonii, *Blgr.*	59	
40. intermedius, *Rüpp.*	59	
40 *a.* bayoni, *Blgr.*	..	234
40 *b.* girardi, *Blgr.*	..	234
41. harringtonii, *Blgr.*	61	
42. jarsinus, *Blgr.*	62	236
43. ilgi, *Pellegr.*	63	
44. eduardianus, *Blgr.*	63	
45. eurystomus, *Keilh.*	64	236
46. zuaicus, *Blgr.*	64	
47. surkis, *Rüpp.*	65	
48. mathoiæ, *Blgr.*	66	
49. meneliki, *Pellegr.*	67	
50. macmillani, *Blgr.*	67	
51. plagiostomus, *Blgr.*	68	
52. bingeri, *Pellegr.*	69	
52 *a.* mirabilis, *Pappenh.*	..	236
53. bottegi, *Blgr.*	70	
54. perplexicans, *Blgr.*	71	236
55. pagenstecheri, *J. G. Fisch.*	72	
56. rhoadesii, *Blgr.*	72	
57. platystomus, *Blgr.*	73	
58. zaphiri, *Blgr.*	74	
59. gorguari, *Rüpp.*	75	
60. oxyrhynchus, *Pfeff.*	76	
61. platyrhinus, *Blgr.*	76	
62. nyassæ, *Keilh.*	77	236
63. elephantis, *Blgr.*	78	
64. sector, *Blgr.*	78	
65. micronema, *Blgr.*	79	

4. Barbus (*con.*).	Volume II. Page	IV. Page
65 *a.* gruveli, *Pellegr.*	..	237
66. brucii, *Blgr.*	80	
66 *a.* dwaarsensis, *Gilchr. & Thomps.*	..	237
66 *b.* rhinophorus, *Blgr.*	..	238
66 *c.* rosæ, *Blgr.*	..	239
66 *d.* habereri, *Stdr.*	..	239
66 *e.* lucius, *Blgr.*	..	240
67. harterti, *Gthr.*	81	
68. paytonii, *Blgr*	82	
69. rothschildi, *Gthr.*	83	
70. riggenbachi, *Gthr.*	84	
71. fritschii, *Gthr.*	85	
72. waldoi, *Blgr.*	86	
73. atlanticus, *Blgr.*	87	
74. gilchristi, *Blgr.*	88	
74 *a.* seeberi, *Gilchr. & Thomps.*	..	241
75. bowkeri, *Blgr.*	89	
75 *a.* robinsoni, *Gilchr. & Thomps.*	..	241
76. aureus, *Cope*	90	
77. johnstonii, *Blgr.*	90	
77 *a.* fasolt, *Pappenh.*	..	241
78. zambesensis, *Peters*	91	
79. lobochilus, *Blgr.*	92	
79 *a.* gunningi, *Gilchr. & Thomps.*	..	243
80. chilotes, *Blgr.*	93	
81. caudovittatus, *Blgr.*	94	
82. rhodesianus, *Blgr.*	95	
82 *a.* sabiensis, *Gilchr. & Thomps.*	..	244
83. victoriæ, *Blgr.*	96	244
83 *a.* cookii, *Gilchr. & Thomps.*	..	244
84. fairbairnii, *Blgr.*	97	
84 *a.* swierstræ, *Gilchr. & Thomps.*	..	245
85. codringtonii, *Blgr.*	98	
86. wurtzi, *Pellegr.*	99	
86 *a.* mawambi, *Pappenh.*	..	246
87. macrolepis, *Pfeff.*	99	
88. lagoensis, *Gthr.*	100	
89. altidorsalis, *Blgr.*	101	

4. Barbus (*con.*).	Volume II. Page	IV. Page
89 *a*. malacanthus, *Pappenh.*	..	247
89 *b*. nasutus, *Gilchr. & Thomps.*	..	247
89 *c*. alluaudi, *Pellegr.*	..	248
90. progenys, *Blgr.*	102	
90 *a*. aspius, *Blgr.*	..	249
91. trimaculatus, *Peters*	103	250
92. nummifer, *Blgr.*	105	250
93. jacksonii, *Gthr.*	106	
94. pappenheimi, *Blgr.*	107	
95. biscarensis, *Blgr.*	108	250
96. callensis, *C. & V.*	109	250
97. setivimensis, *C. & V.*	110	251
98. ksibi, *Blgr.*	111	
99. antinorii, *Blgr.*	112	
100. nasus, *Gthr.*	113	
101. serra, *Peters*	114	251
102. paludinosus, *Peters*	115	251
103. taitensis, *Gthr.*	117	
104. pfefferi, *Blgr.*	117	
105. mattozi, *Guimar.*	118	251
106. rapax, *Stdr.*	119	251
106 *a*. hamiltonii, *Gilchr. & Thomps.*	..	251
106 *b*. brookingi, *Gilchr. & Thomps.*	..	252
107. thikensis, *Blgr.*	120	
108. pleurogramma, *Blgr.*	120	
109. longicauda, *Blgr.*	121	253
110. akakianus, *Blgr.*	122	
111. capensis, *A. Smith.*	123	253
112. serrifer, *Blgr.*	124	253
112 *a*. mohasicus, *Pappenh.*	..	253
112 *b*. luazomelæ, *Lönnb.*	..	254
112 *c*. guineensis, *Pellegr.*	..	255
113. lumiensis, *Blgr.*	125	
114. minchini, *Blgr.*	126	255
115. ansorgii, *Blgr.*	126	
116. tetraspilus, *Pfeff.*	127	
117. laticeps, *Pfeff.*	128	255
118. sexradiatus, *Blgr.*	128	
119. salmo, *Pfeff.*	129	
120. kerstenii, *Peters*	130	255
120 *a*. luhondo, *Pappenh.*	..	255

4. Barbus (*con.*).	Volume II. Page	IV. Page
120 *b*. rufua, *Pappenh.*	..	256
121. eutænia, *Blgr.*	131	256
122. neumayeri, *J. G. Fisch.*	132	
123. nairobiensis, *Blgr.*	132	257
124. portali, *Blgr.*	133	257
125. carpio, *Pfeff.*	134	257
126. percivali, *Blgr.*	135	257
127. zanzibaricus, *Peters*	136	257
127 *a*. argyrotænia, *Blgr.*	..	257
128. argenteus, *Gthr.*	136	
129. wellmani, *Blgr.*	137	
130. kessleri, *Stdr.*	138	258
131. holotænia, *Blgr.*	139	258
132. miolepis, *Blgr.*	141	
133. guirali, *Thom.*	142	259
134. litamba, *Keilh.*	143	259
135. trevelyani, *Gthr.*	143	259
135 *a*. serrula, *Gilchr. & Thomps.*	..	259
135 *b*. sauvagii, *Pellegr.*	..	260
136. apleurogramma, *Blgr.*	144	260
137. amphigramma, *Blgr.*	145	
138. burchelli, *A. Smith.*	146	261
139. motebensis, *Stdr.*	147	
140. burgi, *Blgr.*	147	261
141. vulneratus, *Casteln.*	148	261
142. usambaræ, *Lönnb.*	149	
143. hemipleurogramma, *Blgr.*	150	261
143 *a*. lujæ, *Blgr.*	..	261
144. gurneyi, *Gthr.*	150	261
145. banguelensis, *Blgr.*	151	
146. inermis, *Peters*	152	
146 *a*. urotænia, *Blgr.*	..	262
146 *b*. labialis, *Gilchr. & Thomps.*	..	262
146 *c*. macrurus, *Gilchr. & Thomps.*	..	263
147. quadripunctatus, *Pfeff.*	153	
148. nigeriensis, *Blgr.*	154	264
149. humeralis, *Blgr.*	154	
150. radiatus, *Peters*	155	
151. ablabes, *Blkr.*	156	
151 *a*. spurrelli, *Blgr.*	..	264
151 *b*. macrops, *Blgr.*	..	265

	Volume II. Page	IV. Page
4. Barbus (*con.*).		
152. deserti, *Pellegr.*	157	
153. unitæniatus, *Gthr.* ..	158	266
154. lineomaculatus, *Blgr.*.	159	266
155. innocens, *Pfeff.*	160	266
156. humilis, *Blgr.*	160	
157. fasciolatus, *Gthr.*	161	
157 *a*. barilioides, *Blgr.* ..	..	266
158. chlorotænia, *Blgr.* ..	162	
159. trispilus, *Blkr.*	163	267
159 *a*. tetrastigma, *Blgr.* ..	..	267
160. walkeri, *Blgr.*	164	
161. tæniurus, *Blgr.*	165	
162. camptacanthus, *Blkr.*.	166	
163. callipterus, *Blgr.*	167	268
163 *a*. aboinensis, *Blgr.* ..	..	268
164. werneri, *Blgr.*	168	
165. arcislongæ, *Keilh.*	169	269
166. viviparus, *M. Web.* ..	170	269
167. perince, *Rüpp.*	171	269
168. trispilopleura, *Blgr.*..	172	269
169. neglectus, *Blgr.*	173	
169 *a*. mimus, *Blgr.*	..	269
170. doggetti, *Blgr.*	174	
170 *a*. aurantiacus, *Blyr.* ..	..	270
171. congicus, *Blgr.*	174	
171 *a*. musumbi, *Blgr.*	..	271
172. pleuropholis, *Blgr.* ..	175	272
173. asper, *Blgr.*	176	
174. anoplus, *M. Web.*	177	272
175. afer, *Peters*	178	
176. magdalenæ, *Blgr.*	179	
177. rogersi, *Blgr.*	180	
178. brazzæ, *Pellegr.*	180	
179. aspilus, *Blgr.*	181	272
180. anema, *Blgr.*	182	272
181. trispilomimus, *Blgr.*..	183	272
182. salessii, *Pellegr.*	183	272
182 *a*. apogonostomatus, *Pellegr.*	..	272
183. jæ, *Blgr.*	184	
183 *a*. leonensis, *Blgr.*	..	273
184 *b*. toppini, *Blgr.*	..	274
184. stigmatopygus, *Blgr.*.	185	274
185. pumilus, *Blgr.*	186	
185 *a*. carens, *Blgr.*	..	274

	Volume II. Page	IV. Page
5. Rasbora, *Blkr.*	186	
1. zanzibarensis, *Playf. & Gthr.*	187	
6. Leuciscus, *Cuv.*	188	
1. callensis, *Guichen.* ..	188	275
2. chaignoni, *Vaill.*	189	
7. Leptocypris, *Blgr.*	190	
1. modestus, *Blyr.*	190	
8. Barilius, *Ham. Buch.*	191	
1. niloticus, *Joann.*	193	
2. weeksii, *Blgr.*	195	
3. longirostris, *Blgr.* ..	195	
4. lujæ, *Blgr.*	196	
5. steindachneri, *Pellegr.*	197	275
6. zambesensis, *Peters* ..	198	
6 *a*. peringueyi, *Gilchr. & Thomps.*	..	275
7. weynsii, *Blgr.*	198	
8. neavii, *Blgr.*	199	276
9. ubangensis, *Pellegr.* ..	200	277
10. buchholzi, *Peters*	201	
11. kingsleyæ, *Blgr.*	202	
11 *a*. batesii, *Blgr.*	..	277
11 *b*. ansorgii, *Blgr.*	..	278
12. loati, *Blgr.*	203	279
12 *a*. macrostoma, *Blgr.*..	..	279
13. senegalensis, *Stdr.* ..	204	
14. microcephalus, *Gthr.* .	205	
15. moorii, *Blgr.*	206	280
16. tanganicæ, *Blgr.*	207	
17. microlepis, *Gthr.* ..	208	
9. Engraulicypris, *Gthr.*	209	
1. sardella, *Gthr.*	210	
2. brevianalis, *Blgr.*	211	280
3. argenteus, *Pellegr.* ..	212	
4. bottegi, *Vincig.*	213	
5. minutus, *Blyr.*	213	
10. Chelæthiops, *Blyr.*	214	
1. bibie, *Joann.*	215	280
2. elongatus, *Blgr.*	216	280
11. Nemachilus, *Van Hass.* ..	216	
1. abyssinicus, *Blyr.* ..	217	
Fam. 3. Siluridæ.		
1. Clarias, *Gron.*	221	

	Volume II. Page	IV. Page
1. Clarias (*con.*).		
1. anguillaris, *L.*	226	281
2. gariepinus, *Burch.*	228	281
3. moorii, *Blgr.*	230	
4. senegalensis, *C. & V.*	231	281
5. mossambicus, *Peters*	232	281
6. vinciguerræ, *Blgr.*	234	
7. lazera, *C. & V.*	235	281
7 *a*. ngamensis, *Casteln.*		282
8. mellandi, *Blgr.*	238	283
9. tsanensis, *Blgr.*	239	
10. capensis, *C. & V.*	240	283
11. platycephalus, *Blgr.*	241	
12. jaensis, *Blgr.*	242	283
13. carsonii, *Blgr.*	243	283
14. poensis, *Blgr.*	244	
15. submarginatus, *Peters.*	245	283
16. liocephalus, *Blgr.*	246	283
17. breviceps, *Blgr.*	247	284
18. walkeri, *Gthr.*	248	284
19. longior, *Blgr.*	249	
20. angolensis, *C. & V.*	250	284
21. bythipogon, *Sauv.*	252	284
22. alluaudi, *Blgr.*	253	
23. werneri, *Blgr.*	254	284
23 *a*. oxycephalus, *Blgr.*		284
24. macromystax, *Gthr.*	256	
24 *a*. esamesæ, *Blgr.*		285
25. dumerilii, *Stdr.*	257	286
26. liberiensis, *Stdr.*	259	286
27. pachynema, *Blgr.*	259	287
28. læviceps, *Gill*	260	287
28 *a*. hilgendorfi, *Blgr.*		287
29. buettikoferi, *Stdr.*	261	
30. amplexicauda, *Blgr.*	261	
31. theodoræ, *M. Web.*	262	288
32. fouloni, *Blgr.*	263	288
33. salæ, *Hubr.*	264	288
2. Allabenchelys, *Blgr.*	266	
1. brevior, *Blgr.*	266	
2. longicauda, *Blgr.*	267	288
2 *a*. laticeps, *Stdr.*		288
3. Clariallabes, *Blgr.*	268	
1. melas, *Blgr.*	268	289
1 *a*. brevibarbis, *Pellegr.*		289
4. Gymnallabes, *Gthr.*	270	

	Volume II. Page	IV. Page
4. Gymnallabes (*con.*).		
1. typus, *Gthr.*	270	289
5. Channallabes, *Gthr.*	271	
1. apus, *Gthr.*	271	289
6. Heterobranchus, *Geoffr.*	272	
1. bidorsalis, *I. Geoffr.*	273	290
2. longifilis, *C. & V.*	274	
3. isopterus, *Blkr.*	276	290
7. Dinotopterus, *Blgr.*	276	
1. cunningtoni, *Blgr.*	277	
8. Plotosus, *Lacep.*	278	
1. anguillaris, *Bl.*	278	290
9. Eutropius, *M. & T.*	279	
1. congolensis, *Leach*	281	
2. banguelensis, *Blgr.*	282	
3. niloticus, *Rüpp.*	283	290
4. grenfelli, *Blgr.*	286	290
5. liberiensis, *Hubr.*	287	
6. debauwi, *Blgr.*	288	
7. mentalis, *Blgr.*	288	290
8. mandibularis, *Gthr.*	290	
9. bocagii, *Guimar.*	290	
9 *a*. ansorgii, *Blgr.*		291
9 *b*. seraoi, *Blgr.*		292
10. laticeps, *Blgr.*	291	
11. depressirostris, *Peters.*	291	292
11 *a*. multilineatus, *Pellegr.*		292
12. moebii, *Pfeff.*	293	
10. Schilbe, *Cuv.*	293	
1. mystus, *L.*	293	293
2. uranoscopus, *Rüpp.*	296	
2 *a*. congolensis, *Stdr.*		293
2 *b*. marmoratus, *Blgr.*		294
10 *a*. Ansorgia, *Blgr.*		294
1. vittata, *Blgr.*		295
11. Siluranodon, *Blkr.*	298	
1. auritus, *I. Geoffr.*	298	
12. Physailia, *Blgr.*	300	
1. pellucida, *Blgr.*	300	296
2. occidentalis, *Pellegr.*	301	
2 *a*. ansorgii, *Blgr.*		296
3. somalensis, *Vincig.*	301	
3 *a*. villiersi, *Blgr.*		296
13. Parailia, *Blgr.*	302	
1. congica, *Blgr.*	302	
2. longifilis, *Blgr.*	303	297

	Volume II. Page	IV. Page
14. Bagrus, *Cuv.*	304	
1. bayad, *Forsk.*	305	297
2. orientalis, *Blgr.*	307	
3. docmac, *Forsk.*	308	298
4. degeni, *Blgr.*	311	
5. urostigma, *Vinciy.* ..	312	298
6. meridionalis, *Gthr.* ..	312	
7. ubangensis, *Blgr.* ..	313	298
15. Chrysichthys, *Blkr.*	314	
1. sianenna, *Blgr.*	317	
2. sharpii, *Blgr.*	318	
2 *a.* graueri, *Stdr.*		298
3. acutirostris, *Gthr.* ..	319	299
4. furcatus, *Gthr.*	320	299
4 *a.* bocagii, *Blgr.*		299
4 *b.* ansorgii, *Blgr.*		300
5. nigrodigitatus, *Lacep.*	321	301
6. walkeri, *Gthr.*	324	301
6 *a.* persimilis, *Gthr.*		301
6 *b.* filamentosus, *Blgr.* . ..		301
7. auratus, *Geoffr.*	325	303
8. rueppelli, *Blgr.*	327	
9. brevibarbis, *Blgr.* ..	329	
10. longibarbis, *Blgr.* ..	330	303
11. duttoni, *Blgr.*	331	
11 *a.* thonneri, *Stdr.*		303
12. wagenaari, *Blgr.*	331	
13. cranchii, *Leach*	332	
14. punctatus, *Blgr.*	334	
15. delhezi, *Blgr.*	335	
16. mabusi, *Blgr.*	336	
17. ornatus, *Blgr.*	337	303
18. myriodon, *Blgr.*	339	
19. brachynema, *Blgr.* ..	340	
19 *a.* habereri, *Stdr.*		304
16. Clarotes, *Kner*	341	
1. laticeps, *Rüpp.*	342	304
17. Gephyroglanis, *Blgr.*	344	
1. congicus, *Blgr.*	345	
2. ogoensis, *Pellegr.*	346	
3. sclateri, *Blgr.*	346	304
4. tilhoi, *Pellegr.*	348	305
4 *a.* gymnorhynchus, *Pappenh.*		305

	Volume II. Page	IV. Page
17. Gephyroglanis (*con.*).		
5. longipinnis, *Blgr.* ..	348	
5 *a.* habereri, *Stdr.*		305
18. Phyllonemus, *Blgr.*	349	
1. typus, *Blgr.*	349	
19. Leptoglanis, *Blgr.*	350	
1. xenognathus, *Blgr.* ..	351	
2. rotundiceps, *Hilg.* ..	352	
20. Amphilius, *Gthr.*	353	306
1. uranoscopus, *Pfeff.* ..	354	
2. grandis, *Blgr.*	355	306
2 *a.* oxyrhinus, *Blgr.*		306
3. krefftii, *Blgr.*	356	
4. platychir, *Gthr.*	357	
5. hargeri, *Blgr.*	358	
5 *a.* jacksonii, *Blgr.*		307
6. longirostris, *Blgr.* ..	359	308
6 *a.* grammatophorus, *Pellegr.*		308
7. atesuensis, *Blgr.*	360	309
8. brevis, *Blgr.*	361	
9. angustifrons, *Blgr.* ..	362	
9 *a.* lampii, *Pietschm.*		309
21. Paramphilius, *Pellegr.*	363	
1. trichomycteroides, *Pellegr.*	363	
22. Parauchenoglanis, *Blgr.* ..	364	
1. guttatus, *Lönnb.*	364	
1 *a.* ansorgii, *Blgr.*		309
2. macrostoma, *Pellegr.* .	365	310
23. Auchenoglanis, *Gthr.*	366	
1. biscutatus, *I. Geoffr.* .	367	310
2. occidentalis, *C. & V.* .	369	310
3. ngamensis, *Blgr.*	371	
4. altipinnis, *Blgr.*	372	311
4 *a.* monkei, *Keilh.*		311
4 *b.* iturii, *Stdr.*		311
5. ballayi, *Sauv.*	373	312
5 *a.* longiceps, *Blgr.*		312
6. ubangensis, *Blgr.* ..	375	
7. punctatus, *Blgr.*	376	
24. Notoglanidium, *Gthr.*	377	
1. walkeri, *Gthr.*	377	
1 *a.* thomasi, *Blgr.*		313
24 *a.* Liauchenoglanis, *Blgr.*		314
1. maculatus, *Blgr.*		314

	Volume II. Page	IV. Page
25. Ancharius, *Stdr.*	378	
1. fuscus, *Stdr.*	379	
2. brevibarbis, *Blgr.*	380	
26. Galeichthys, *C. & V.*	381	
1. feliceps, *C. & V.*	381	
2. ater, *Cast.*	382	
27. Arius, *C. & V.*	383	
1. latiscutatus, *Gthr.*	385	315
2. gigas, *Blgr.*	386	
3. heudeloti, *C. & V.*	387	315
4. madagascariensis, *Vaill.*	388	
5. kirkii, *Gthr.*	389	
6. africanus, *Gthr. & Playf.*	389	
28. Synodontis, *Cuv.*	391	
1. caudalis, *Blgr.*	397	
2. polyodon, *Vaill.*	398	
3. acanthomias, *Blgr.*	400	315
4. omias, *Gthr.*	401	
5. budgetti, *Blgr.*	403	
6. schall, *Bl. Schn.*	404	316
7. gambiensis, *Gthr.*	407	316
8. ocellifer, *Blgr.*	409	316
9. frontosus, *Vaill.*	410	
10. caudovittatus, *Blgr.*	412	
11. granulosus, *Blgr.*	413	
12. zambesensis, *Peters*	415	316
13. nigromaculatus, *Blgr.*	416	
14. melanostictus, *Blgr.*	418	316
15. multimaculatus, *Blgr.*	419	
16. multipunctatus, *Blgr.*	420	
17. victoriæ, *Blgr.*	421	316
18. nebulosus, *Peters*	423	
19. woosnami, *Blgr.*	424	
20. marmoratus, *Lönnb.*	425	
21. afro-fischeri, *Hilg.*	425	
22. fuelleborni, *Hilg. & Pappenh.*	427	
23. eupterus, *Blgr.*	427	
24. nigrita, *C. & V.*	429	316
25. melanopterus, *Blgr.*	431	
25 *a.* ansorgii, *Blgr.*	..	317
26. macrostigma, *Blgr.*	432	318
27. obesus, *Blgr.*	433	318

	Volume II. Page	IV. Page
28. Synodontis (*con.*).		
28. robbianus, *J. A. Smith.*	435	318
28 *a.* steindachneri, *Blgr.*	..	318
29. haugi, *Pellegr.*	436	
30. depauwi, *Blgr.*	438	
31. tholloni, *Blgr.*	439	
32. angelicus, *Schilth.*	440	320
33. courteti, *Pellegr.*	441	320
34. pardalis, *Blgr.*	442	320
34 *a.* leopardinus, *Pellegr.*	..	320
35. ornatipinnis, *Blgr.*	444	
36. soloni, *Blgr.*	445	
36 *a.* tessmanni, *Pappenh.*	..	321
37. guttatus, *Gthr.*	447	
38. longirostris, *Blgr.*	448	
39. labeo, *Gthr.*	449	
40. vaillanti, *Blgr.*	450	
41. xiphias, *Gthr.*	451	
42. greshoffi, *Schilth.*	452	
43. alberti, *Schilth.*	454	321
44. batesii, *Blgr.*	455	321
45. serratus, *Rüpp.*	457	
46. geledensis, *Gthr.*	458	322
47. filamentosus, *Blgr.*	460	
48. smiti, *Blgr.*	461	
49. notatus, *Vaill.*	462	
50. nummifer, *Blgr.*	463	322
51. sorex, *Gthr.*	465	322
52. pleurops, *Blgr.*	466	322
53. decorus, *Blgr.*	468	322
54. clarias, *L.*	469	322
54 *a.* annectens, *Blgr.*	..	322
55. resupinatus, *Blgr.*	471	
56. batensoda, *Rüpp.*	472	323
57. membranaceus, *Geoffr.*	474	323
29. Microsynodontis, *Blgr.*	476	
1. batesii, *Blgr.*	476	
30. Chiloglanis, *Peters*	478	
1. deckenii, *Peters*	479	
2. modjensis, *Blgr.*	480	
3. neumanni, *Blgr.*	481	
4. cameronensis, *Blgr.*	482	
5. niloticus, *Blgr.*	483	
6. brevibarbis, *Blgr.*	484	
7. batesii, *Blgr.*	485	

	Volume II. Page	IV. Page
31. Euchilichthys, *Blgr.*.... ..	486	
1. guentheri, *Schilth.* ..	487	
2. royauxi, *Blgr.*	488	
3. dybowskii, *Vaill.*	489	
3 *a*. habereri, *Stdr.*		323
32. Atopochilus, *Sauv.*	490	
1. savorgnani, *Sauv.*	490	
2. macrocephalus, *Blgr.*	491	
33. Mochocus, *Joann.*	492	
1. niloticus, *Joann.*	493	
2. brevis, *Blgr.*	494	
34. Doumea, *Sauv.*	496	
1. typica, *Sauv.*	496	
2. angolensis, *Blgr.*	497	
35. Phractura, *Blgr.*	498	
1. bovei, *Perugia*	499	
2. lindica, *Blgr.*	500	
3. brevicauda, *Blgr.*	502	
4. intermedia, *Blgr.*	503	
5. longicauda, *Blgr.*	504	
6. ansorgii, *Blgr.*	504	
7. scaphirhynchura, *Vaill.*	505	
36. Paraphractura, *Blgr.*	506	
1. tenuicauda, *Blgr.*	506	
37. Trachyglanis, *Blgr.*	507	
1. minutus, *Blgr.*	507	
38. Belonoglanis, *Blgr.*	508	
1. tenuis, *Blgr.*	509	
39. Andersonia, *Blgr.*	510	
1. leptura, *Blgr.*	510	
40. Malopterurus, *Lacep.*	511	
1. electricus, *Gm.*	512	324

Subord. III. SYMBRANCHII.

Fam. 1. SYMBRANCHIDÆ.

	Volume III.
1. Symbranchus, *Bl.*	1
1. afer, *Blgr.*	2

Subord. IV. APODES.

Fam. 1. ANGUILLIDÆ.

	Volume III.	IV. Page
1. Anguilla, *Shaw*.....	3	
1. vulgaris, *Turt.*	4	
2. mossambica, *Peters* ..	6	
1. Anguilla (*con.*).		
3. bengalensis, *Gray* ..	7	
4. australis, *Rich.*	9	
2. Sphagebranchus, *Bl.*	10	
1. cephalopeltis, *Blkr.* ..	10	

Subord. V. HAPLOMI.

Fam. 1. GALAXIIDÆ.

1. Galaxias, *Cuv.*	12
1. zebratus, *Casteln.*	12
2. punctifer, *Casteln.* ..	13

Subord. VI. SCOMBRESOCES.

Fam. 1. SCOMBRESOCIDÆ.

1. Hemirhamphus, *Cuv.*	14
1. far, *Forsk.*	15
2. Zenarchopterus, *Gill*	16
1. dispar, *C. & V.*	16

Fam. 2. CYPRINODONTIDÆ.

1. Cyprinodon, *Lacep.*	18	
1. fasciatus, *Val.*	18	
2. dispar, *Rüpp.*	20	
3. iberus, *C. & V.*	21	
2. Tellia, *Gerv.*	22	
1. apoda, *Gerv.*	22	
3. Fundulus, *Lacep.*	23	
1. bivittatus, *Lönnb.*	24	
2. loennbergii, *Blgr.*	25	
3. gardneri, *Blgr.*	26	
4. spurrelli, *Blgr.*	27	
5. batesii, *Blgr.*	28	
6. gularis, *Blgr.*	29	
7. arnoldi, *Blgr.*	30	
8. palmquistii, *Lönnb.* ..	31	
9. walkeri, *Blgr.*	32	
10. orthonotus, *Peters* ..	33	
11. melanospilus, *Pfeff.* ..	34	
12. neumanni, *Hilg.*	35	
13. guentheri, *Pfeff.*	35	
14. tæniopygus, *Hilg.* ..	37	
15. sjoestedti, *Lönnb.*	38	325
16. microlepis, *Vincig.* ..	39	
17. nisorius, *Cope*	39	
18. capensis, *Garm.*	39	

	Volume III. Page	IV. Page
4. Haplochilus, *McClell.*	40	
1. antinorii, *Vincig.*	44	
2. myaposæ, *Blgr.*	44	
3. pumilus, *Blgr.*	45	
4. christyi, *Blgr.*	46	
5. ferranti, *Blgr.*	47	
6. cameronensis, *Blgr.* ..	47	325
7. liberiensis, *Blgr.*	48	
8. lujæ, *Blgr.*	49	
9. homalonotus, *A. Dum.*	50	
10. nuchimaculatus, *Guichen.*	50	
11. playfairii, *Gthr.*	51	
12. fasciolatus, *Gthr.*	52	325
13. ansorgii, *Blgr.*	53	
14. sexfasciatus, *Gill*	54	
15. chaperi, *Sauv.*	56	
16. decorsii, *Pellegr.*	57	
17. exiguus, *Blgr.*	57	
18. elegans, *Blgr.*	58	
19. petersii, *Sauv.*	59	
20. calliurus, *Blgr.*	59	
21. striatus, *Blgr.*	60	
22. spilauchen, *A. Dum.* ..	61	325
23. hutereaui, *Blgr.*	63	
24. loati, *Blgr.*	63	
25. kingii, *Blgr.*	64	
26. schoelleri, *Blgr.*	65	
27. moeruensis, *Blgr.*	66	
28. macrurus, *Blgr.*	67	325
29. katangæ, *Blgr.*	67	
30. cabindæ, *Blgr.*	68	
31. johnstonii, *Gthr.*	69	
32. marni, *Stdr.*	70	
33. senegalensis, *Stdr.* ..	71	
34. acuticaudatus, *Pellegr.*	72	
35. longiventralis, *Blgr.* ..	72	
36. macrostigma, *Blgr.* ..	73	
37. nigricans, *Blgr.*	74	
38. multifasciatus, *Blgr.*	75	
39. grahami, *Blgr.*	75	
40. bifasciatus, *Stdr.*	76	325
41. chevalieri, *Pellegr.* ..	77	
41 *a.* annulatus, *Blgr.* ..	..	326
42. singa, *Blgr.*	78	
5. Procatopus, *Blgr.*	78	
1. nototænia, *Blgr.*	79	
6. Lamprichthys, *Regan*	80	
1. tanganicanus, *Blgr.* ..	80	

Subord. VII. LOPHOBRANCHII.

Fam. 1. SYNGNATHIDÆ.

1. Belonichthys, *Peters*	82	
1. zambesensis, *Peters* ..	82	
2. Doryichthys, *Kaup*	83	
1. smithii, *A. Dum.*	83	
3. Cœlonotus, *Peters*	84	
1. argulus, *Peters*	85	
2. liaspis, *Blkr.*	85	
4. Syngnathus, *Art.*	86	
1. kaupi, *Blkr.*	86	
2. ansorgii, *Blgr.*	87	
3. pulchellus, *Blgr.*	88	
4. algeriensis, *Playf.* ..	88	

Subord. VIII. ACANTHOPTERYGII.

Fam. 1. CENTRARCHIDÆ.

1. Kuhlai, *Gill*	92	
1. rupestris, *Lacep.*	93	
2. tæniura, *C. & V.*	95	
3. malo, *C. & V.*	96	
4. caudovittata, *Lacep.* ..	98	

Fam. 2. NANDIDÆ.

1. Polycentropsis, *Blgr.*	99	
1. abbreviata, *Blgr.*	100	

Fam. 3. SERRANIDÆ.

1. Morone, *Mitch.*	101	
1. labrax, *L.*	102	
2. punctata, *Bl.*	103	
2. Lates, *C. & V.*	105	
1. niloticus, *L.*	105	
2. microlepis, *Blgr.*	108	
3. angustifrons, *Blgr.* ..	109	
3. Luciolates, *Blgr.*	110	
1. stappersii, *Blgr.*	110	
2. brevior, *Blgr.*	111	
4. Ambassis, *C. & V.*	111	
1. commersonii, *C. & V.*	112	326

	Volume III. Page	IV. Page
5. Therapon, *Cuv.*	113	
1. jarbua, *Forsk.*	113	
Fam. 4. Sciænidæ.		
1. Corvina, *Cuv.*	115	
1. nigrita, *C. & V.*	116	
2. Otolithus, *Cuv.*	117	
1. senegalensis, *C. & V.*	118	
2. macrognathus, *Blkr.*	119	
Fam. 5. Scorpididæ.		
1. Psettus, *C. & V.*	119	
1. falciformis, *Lacep.*	120	
2. argenteus, *L.*	121	
3. sebæ, *C. & V.*	123	327
Fam. 6. Pristipomatidæ.		
1. Pristipoma, *Cuv.*	125	
1. jubelini, *C. & V.*	126	
2. Diagramma, *Cuv.*	127	
1. griseum, *C. & V.*	128	
2. macrolepis, *Blgr.*	129	
3. Otoperca, *Blgr.*	130	
1. aurita, *C. & V.*	130	
Fam. 7. Sparidæ.		
1. Sparus, *L.*	132	
1. vagus, *Peters*	132	
Fam. 8. Cichlidæ.		
1. Tilapia, *A. Smith*	138	
1. hunteri, *Gthr.*	149	
2. shirana, *Blgr.*	151	
3. nigra, *Gthr.*	152	
4. kafuensis, *Blgr.*	153	
5. mossambica, *Peters*	154	327
6. vorax, *Pfeff.*	156	
7. natalensis, *M. Web.*	157	327
8. linnelli, *Lönnb.*	159	
9. macrochir, *Blgr.*	160	
10. nilotica, *L.*	162	327
11. eduardiana, *Blgr.*	166	
12. variabilis, *Blgr.*	167	
13. galilæa, *Art.*	169	327
14. andersonii, *Castelu.*	171	
15. heudeloti, *A. Dum.*	173	327
15 *a.* caudomarginata, *Blgr.*		327
16. multifasciata, *Gthr.*	175	
17. macrocephala, *Blkr.*	176	328
18. ngomensis, *Pellegr.*	178	
19. haugi, *Pellegr.*	178	
20. auromarginata, *Blgr.*	180	
21. lepidura, *Blgr.*	181	
22. boulengeri, *Pellegr.*	182	
23. squamipinnis, *Gthr.*	183	
24. dolloi, *Blgr.*	184	
25. mariæ, *Blgr.*	186	
26. manyaræ, *Hilg.*	187	
27. amphimelas, *Hilg.*	188	
28. alcalica, *Hilg.*	188	
29. dubia, *Lönnb.*	189	
30. melanopleura, *A. Dum.*	190	329
31. meeki, *Pellegr.*	194	
32. cabræ, *Blgr.*	194	
33. brevimanus, *Blgr.*	196	
34. zillii, *Gerv.*	197	329
35. kottæ, *Lönnb.*	200	
36. guineensis, *Blkr.*	201	
37. tholloni, *Sauv.*	202	
38. christyi, *Blgr.*	204	
39. bilineata, *Pellegr.*	204	
40. crassa, *Pellegr.*	205	
41. sparrmani, *A. Smith*	206	
41 *a.* margaritacea, *Blgr.*		329
42. ovalis, *Stdr.*	208	
43. steindachneri, *Blgr.*	209	
44. percivali, *Blgr.*	210	
45. grahami, *Blgr.*	211	
46. woosnami, *Blgr.*	212	
47. jallæ, *Blgr.*	213	
48. humilis, *Stdr.*	213	
49. buettikoferi, *Hubr.*	214	330
50. fasciata, *Perugia*	215	
51. burtoni, *Gthr.*	217	
52. acuticeps, *Stdr.*	218	
53. swynnertoni, *Blgr.*	219	
54. adolphi-frederici, *Blgr.*	220	
55. giardi, *Pellegr.*	221	
56. fuellebornii, *Hilg. & Pappenh.*	222	

	Volume III. Page	Volume IV. Page
1. Tilapia (*con.*).		
57. calliptera, *Gthr.*	222	
58. lucullæ, *Blgr.*	224	
59. williamsii, *Gthr.*	225	
60. stigmatogenys, *Blgr.* .	226	
61. stormsii, *Blgr.*	227	
62. horii, *Gthr.*	228	
63. perrieri, *Pellegr.*	229	
64. humilior, *Blgr.*	230	
65. pallida, *Blgr.*	231	
66. pappenheimi, *Blgr.* ..	232	
67. lacrimosa, *Blgr.*	234	
68. nubila, *Blgr.*	235	
69. pectoralis, *Pfeff.*	237	
70. macrops, *Blgr.*	238	
71. martini, *Blgr.*	239	
72. bayoni, *Blgr.*	240	
73. nigricans, *Blgr.*	241	
74. simotes, *Blgr.*	242	
75. livingstonii, *Blgr.* ...	243	
76. zebra, *Blgr.*	244	
77. aurata, *Blgr.*	246	
78. polyacanthus, *Blgr.* ..	247	
79. pleurotænia, *Blgr.* ..	247	
80. johnstonii, *Gthr.*	249	
81. tetrastigma, *Gthr.* ..	250	
82. kirkii, *Gthr.*	251	
83. lateristriga, *Gthr.* ..	253	
84. lethrinus, *Gthr.*	254	
85. rostrata, *Blgr.*	255	
86. dardennii, *Blgr.*	256	
87. oligacanthus, *Blkr.* ..	258	
88. betsileana, *Blgr.*	259	
89. microphthalma, *Blgr.*	261	
90. brevis, *Blgr.*	262	
91. inornata, *Blgr.*	263	
92. trematocephala, *Blgr.*	264	
93. boops, *Blgr.*	265	
94. grandoculis, *Blgr.* ..	266	
2. Petrochromis, *Blgr.*	267	
1. tanganicæ, *Gthr.*	268	
2. andersonii, *Blgr.*	269	
3. polyodon, *Blgr.*	270	
4. nyassæ, *Blgr.*	272	
5. fasciolatus, *Blgr.*	273	
3. Cunningtonia, *Blgr.*	273	
1. longiventralis, *Blgr.* ..	273	
4. Simochromis, *Blgr.*	274	
1. diagramma, *Gthr.*	275	
5. Tropheus, *Blgr.*	276	
1. moorii, *Blgr.*	276	
2. annectens, *Blgr.*	278	
6. Asprotilapia, *Blgr.*	278	
1. leptura, *Blgr.*	279	
7. Lobochilotes, *Blgr.*	280	
1. labiatus, *Blgr.*	280	
8. Docimodus, *Blgr.*	281	
1. johnstonii, *Blgr.*	282	
9. Steatocranus, *Blgr.*	283	
1. gibbiceps, *Blgr.*	283	
10. Haplochromis, *Pfeff.*	284	
1. livingstonii, *Gthr.* ..	286	
2. venustus, *Blgr.*	287	
3. schubotzi, *Blgr.*	288	
4. nuchisquamulatus, *Hilg.*	290	
5. jeanneli, *Pellegr.*	291	
6. angustifrons, *Blgr.* ..	292	
7. ishmaeli, *Blgr.*	293	
8. roberti, *Pellegr.*	295	
9. stanleyi, *Blgr.*	295	
10. percoides, *Blgr.*	296	
11. graueri, *Blgr.*	298	
12. strigigena, *Pfeff.*	299	
13. moffati, *Castelu.*	300	330
14. desfontainesii, *Lacep.*	302	330
15. alluaudi, *Pellegr.*	305	
16. moeruensis, *Blgr.* ..	307	
11. Paratilapia, *Blkr.*	308	
1. polleni, *Blkr.*	315	
2. cerasogaster, *Blgr.* ..	316	
3. macrocephala, *Blgr.* ..	317	
4. gestri, *Blgr.*	318	
5. longimanus, *Blgr.* ..	319	
6. angusticeps, *Blgr.* ..	320	
7. parvidens, *Blgr.*	322	
8. pfefferi, *Blgr.*	323	
9. demeusii, *Blgr.*	324	
10. afra, *Gthr.*	325	
11. modesta, *Gthr.*	326	

	Volume III. Page	IV. Page
11. Paratilapia (*con.*).		
12. toddi, *Blgr.*	327	
13. thumbergii, *Casteln.*	328	330
14. vittata, *Blgr.*	330	
15. compressiceps, *Blgr.*	331	
16. longirostris, *Hilg.*	332	
17. prognatha, *Pellegr.*	333	
18. serranus, *Pfeff.*	334	
19. guiarti, *Pellegr.*	336	
20. bayoni, *Blgr.*	337	
21. chilotes, *Blgr.*	338	
22. pectoralis, *Blgr.*	339	
23. maculipinna, *Pellegr.*	341	
24. victoriana, *Pellegr.*	341	
25. granti, *Blgr.*	342	
26. cinerea, *Blgr.*	344	
27. crassilabris, *Blgr.*	345	
28. bicolor, *Blgr.*	346	
29. retrodens, *Hilg.*	347	
30. polyodon, *Blgr.*	349	
31. dorsalis, *Pellegr.*	350	
31 *a.* thomasi, *Blgr.*		331
32. luebberti, *Hilg.*	350	
33. corbali, *Blgr.*	351	
34. codringtoni, *Blgr.*	352	
35. carlottæ, *Blgr.*	353	
36. gibbiceps, *Blgr.*	354	
37. frederici, *Casteln.*	355	
38. smithii, *Casteln.*	357	
39. mellandi, *Blgr.*	358	
40. nototænia, *Blgr.*	359	
41. dimidiata, *Gthr.*	360	
42. rhoadesii, *Blgr.*	361	
43. chrysonota, *Blgr.*	362	
44. intermedia, *Gthr.*	363	
45. schwebischi, *Sauv.*	365	
46. ventralis, *Blgr.*	365	
47. dewindti, *Blgr.*	367	
48. furcifera, *Blgr.*	368	
49. stenosoma, *Blgr.*	369	
50. microlepis, *Blgr.*	370	
51. leptosoma, *Blgr.*	372	
52. nigripinnis, *Blgr.*	373	
53. calliura, *Blgr.*	374	
12. Nannochromis, *Pellegr.*	375	
1. nudiceps, *Blgr.*	375	
2. dimidiatus, *Pellegr.*	376	

	Volume III. Page	IV. Page
12. Nannochromis (*con.*).		
3. squamiceps, *Blgr.*	376	
13. Pelmatochromis, *Stdr.*	377	
1. polylepis, *Blgr.*	382	
2. jentinki, *Stdr.*	383	332
2 *a.* intermedius, *Blgr.*		332
3. lateralis, *Blgr.*	385	
4. congicus, *Blgr.*	386	
5. guentheri, *Sauv.*	388	
6. regani, *Pellegr.*	390	
7. buettikoferi, *Stdr.*	390	333
8. ocellifer, *Blgr.*	391	
9. nigrofasciatus, *Pellegr.*	393	
10. caudifasciatus, *Blgr.*	394	333
11. longirostris, *Blgr.*	395	
12. boulengeri, *Lönnb.*	396	
13. welwitschii, *Blgr.*	397	
14. kingsleyæ, *Blgr.*	398	
14 *a.* humilis, *Blgr.*		333
15. subocellatus, *Gthr.*	399	
16. kribensis, *Blgr.*	400	
17. tæniatus, *Blgr.*	401	
18. pulcher, *Blgr.*	402	
19. arnoldi, *Blgr.*	404	
20. annectens, *Blgr.*	405	
21. ansorgii, *Blgr.*	406	
22. multidens, *Pellegr.*	407	
23. angolensis, *Stdr.*	408	
24. multiocellatus, *Blgr.*	409	
25. darlingi, *Blgr.*	410	
26. riponianus, *Blgr.*	411	
27. microdon, *Blgr.*	412	
28. obesus, *Blgr.*	414	
29. auritus, *Blgr.*	415	
30. spekii, *Blgr.*	416	
31. flavipinnis, *Blgr.*	418	
32. cavifrons, *Hilg.*	419	
33. frontosus, *Blgr.*	420	
34. macrops, *Blgr.*	421	
35. stappersii, *Blgr.*	423	
36. pleurospilus, *Blgr.*	423	
37. rhodostigma, *Blgr.*	424	
14. Platytæniodus, *Blgr.*	426	
1. degeni, *Blgr.*	426	
15. Hemichromis, *Peters*	427	
1. fasciatus, *Peters*	428	335
2. bimaculatus, *Gill*	430	335

Volume III. Page

16. Champsochromis, *Blgr.* .. 433
1. cæruleus, *Blgr.* 433
2. longiceps, *Gthr.* 434
3. esox, *Blgr.* 435
17. Bathybates, *Blgr.* 436
1. graueri, *Stdr.* 437
2. ferox, *Blgr.* 438
3. horni, *Stdr.* 440
4. vittatus, *Blgr.* 440
5. fasciatus, *Blgr.* 441
6. minor, *Blgr.*..... 442
18. Haplotaxodon, *Blgr.* 443
1. microlepis, *Blgr.* 444
19. Cyrtocara, *Blgr.* 445
1. moorii, *Blgr.* 445
20. Ectodus, *Blgr.*..... 446
1. descampsii, *Blgr.*..... 446
21. Enantiopus, *Blgr.* 447
1. melanogenys, *Blgr.* .. 448
2. ochrogenys, *Blgr.*..... 449
22. Stappersia, *Blgr.* 450
1. singularis, *Blgr.* 450
23. Xenotilapia, *Blgr.* 451
1. sima, *Blgr.* 452
2. ornatipinnis, *Blgr.* .. 453
24. Grammatotria, *Blgr.* 453
1. lemairii, *Blgr.* 454
25. Trematocara, *Blgr.* 455
1. marginatum, *Blgr.* .. 455
2. nigrifrons, *Blgr.* 456
3. unimaculatum, *Blgr.* . 457
26. Gephyrochromis, *Blgr.* .. 458
1. moorii, *Blgr.* 458
27. Lamprologus, *Schilth.*..... 459
1. brevianalis, *Blgr.*..... 462
2. tetracanthus, *Blgr.* .. 463
3. marginatus, *Blgr.*..... 463
4. congolensis, *Schilth.*.. 464
5. tumbanus, *Blgr.* 465
6. mocquardii, *Pellegr.*.. 466
7. tretocephalus, *Blgr.* . 466
8. hecqui, *Blgr.* 467
9. multifasciatus, *Blgr.* . 468
10. modestus, *Blgr.* 469
11. mondabu, *Blgr.* 470
12. steindachneri, *Blgr.*... 471

Volume III. Page

27. Lamprologus (*con.*).
13. boulengeri, *Stdr.* 471
14. elongatus, *Blgr.* 472
15. pleurostigma, *Blgr.*.. 473
16. cunningtoni, *Blgr.* .. 474
17. lemairii, *Blgr.* 475
18. callipterus, *Blgr.*..... 476
19. fasciatus, *Blgr.* 477
20. brevis, *Blgr.* 478
21. moorii, *Blgr.* 478
22. compressiceps, *Blgr.* . 479
23. tæniurus, *Blgr.* 480
24. calliurus, *Blgr.*..... 481
25. reticulatus, *Blgr.*..... 482
26. furcifer, *Blgr.* 483
28. Julidochromis, *Blgr.* 484
1. ornatus, *Blgr.* 484
29. Telmatochromis, *Blgr.* .. 485
1. temporalis, *Blgr.*..... 486
2. vittatus, *Blgr.* 487
30. Bayonia, *Blgr.*..... 488
1. xenodonta, *Blgr.*..... 488
31. Hemitilapia, *Blgr.* 489
1. oxyrhynchus, *Blgr.*.. 489
2. bayoni, *Blgr.* 491
3. materfamilias, *Pellegr.* 492
32. Chilochromis, *Blgr.*..... 492
1. duponti, *Blgr.* 493
33. Corematodus, *Blgr.*..... 494
1. shiranus, *Blgr.*..... 494
34. Eretmodus, *Blgr.*..... 495
1. cyanostictus, *Blgr.* .. 495
35. Spathodus, *Blgr.*..... 496
1. erythrodon, *Blgr.*..... 496
36. Perissodus, *Blgr.*..... 497
1. microlepis, *Blgr.*..... 497
37. Chilotilapia, *Blgr.* 498
1. rhoadesii, *Blgr.* 499
38. Schubotzia, *Blgr.*..... 500
1. eduardiana, *Blgr.*..... 500
39. Xenochromis, *Blgr.*..... 501
1. hecqui, *Blgr.* 502
40. Plecodus, *Blgr.* 503
1. paradoxus, *Blgr.*..... 503
41. Paretroplus, *Blkr.* 504
1. damii, *Blkr.*..... 505
2. polyactis, *Blkr.* 506

Fam. 9. Carangidæ.

Volume IV.
Page
1. Trachynotus, *Lacep.* 1
1. falcatus, *L.* 2
2. goreensis, *C. & V.* 3

Fam. 10. Pleuronectidæ.

1. Citharichthys, *Blkr.* 4
1. spilopterus, *Gthr.* 4
2. Cynoglossus, *Ham. Buch.* 5
1. senegalensis, *Kaup* 6

Fam. 11. Gobiidæ.

1. Eleotris, *Gron.* 7
1. lebretoni, *Stdr.* 9
2. pleurops, *Blgr.* 10
3. butis, *Ham. Buch.* 10
4. tohizonæ, *Stdr.* 12
5. nana, *Blgr.* 12
6. uellensis, *Blgr.* 13
7. kribensis, *Blgr.* 14
8. leonensis, *Blgr.* 15
9. ophiocephalus, *C. & V.* 15
10. madagascariensis, *C. & V.* .. 16
11. africana, *Stdr.* 17
12. vittata, *A. Dum.* 18
13. monteiri, *O'Shaughn.* 20
14. fusca, *Bl.* 21
2. Gobius, *Art.* 22
1. giuris, *Ham. Buch.* 24
2. rhodopterus, *Gthr.* 26
3. dewaalii, *M. Web.* 26
3 *a*. thomasi, *Blgr.* 336
4. maindroni, *Sauv.* 27
5. gilchristi, *Blgr.* 27
6. nudiceps, *C. & V.* 28
7. bustamantæi, *Greeff* 29
8. madagascariensis, *Blkr.* 29
9. macrorhynchus, *Blkr.* 29
10. æneofuscus, *Peters* 30
11. guineensis, *Peters* 31
12. samberanensis, *Blkr.* 32
13. soporator, *C. & V.* 33
14. nigri, *Gthr.* 34

Volume IV.
Page
2. Gobius (*con.*)
15. paganellus, *L.* 35
16. hypselosoma, *Blkr.* 36
17. ocellaris, *Brouss.* 36
18. schlegelii, *Gthr.* 37
19. hilgendorfi, *Pfeff.* 38
20. polyzona, *Blkr.* 38
21. occidentalis, *Blgr.* 39
3. Nematogobius, *Blgr.* 40
1. ansorgii, *Blgr.* 40
4. Gobioides, *Lacep.* 41
1. ansorgii, *Blgr.* 42
5. Sicydium, *C. & V.* 42
1. brevifilis, *Ogilvie-Grant* 43
2. acutipinnis, *Guichen.* 44
3. laticeps, *C. & V.* 44
4. lagocephalum, *Pall.* 45
5. parvipinnis, *Guichen.* 45
6. Lentipes, *Gthr.* 46
1. bustamantæi, *Blgr.* 46

Fam. 12. Osphromenidæ.

1. Micracanthus, *Sauv.* 47
1. marchii, *Sauv.* 47

Fam. 13. Anabantidæ.

1. Anabas, *Cuv.* 48
1. capensis, *C. & V.* 50
2. vicinus, *Blgr.* 51
3. bainsii, *Casteln.* 52
4. multispinis, *Peters* 53
5. pellegrini, *Blgr.* 54
6. nigropannosus, *Reichen.* .. 55
7. congicus, *Blgr.* 57
8. nanus, *Gthr.* 58
9. ansorgii, *Blgr.* 59
10. fasciolatus, *Blgr.* 60
11. petherici, *Gthr.* 61
12. kingsleyæ, *Gthr.* 62
13. muriei, *Blgr.* 64
14. maculatus, *Thomin.* 65
15. oxyrhynchus, *Blgr.* 66
16. ocellatus, *Pellegr.* 67

Fam. 14. Ophiocephalidæ.

Volume IV.
Page

1. Ophiocephalus, *Bl.* 69
1. africanus, *Stdr.* 69
2. obscurus, *Gthr.* 70
3. insignis, *Sauv.* 72

Fam. 15. Atherinidæ.

1. Atherina, *L.* 73
1. mochon, *C. & V.* 74
2. gabonensis, *H. W. Fowler* .. 76
3. sikoræ, *Sauv.* 76
4. alaotrensis, *Pellegr.* 76
2. Bedotia, *Regan* 77
1. madagascariensis, *Regan* .. 77
2. geayi, *Pellegr.* 77

Fam. 16. Mugilidæ.

1. Mugil, *Art.* 78
1. cephalus, *L.* 80
2. oeur, *Forsk.* 82
3. capito, *Cuv.* 83
4. saliens, *Risso* 85
5. auratus, *Risso* 86
6. falcipinnis, *C. & V.* 88
7. chelo, *Cuv.* 89
8. seheli, *Forsk.* 91
9. robustus, *Gthr.* 92
10. ceylonensis, *Gthr.* 93
11. macrolepis, *A. Smith* 94
12. hoefleri, *Stdr.* 96
13. grandisquamis, *C. & V.* .. 96
14. waigiensis, *Q. & G.* 97
2. Agonostomus, *Benn.* 99
1. telfairii, *Benn.* 99

Fam. 17. Polynemidæ.

1. Pentanemus, *Art.* 100
1. quinquarius, *L.* 100
2. Polynemus, *L.* 102
1. quadrifilis, *C. & V.* 102
3. Galeoides, *Gthr.* 103
1. decadactylus, *Bl.* 103

Fam. 18. Sphyrænidæ.

Volume IV.
Page

1. Sphyræna, *Art.* 105
1. guachancho, *C. & V.* 105

Fam. 19. Gastrosteidæ.

1. Gastrosteus, *L.* 107
1. aculeatus, *L.* 107

Fam. 20. Blennidæ.

1. Blennius, *L.* 108
1. frater, *Bl.-Schn.* 108
2. Salarias, *Cuv.* 110
1. monochrous, *Blkr.* 111

Subord. IX. Opisthomi.

Fam. 1. Mastacembelidæ.

1. Mastacembelus, *Gron.* 112
1. paucispinis, *Blgr.* 115
2. frenatus, *Blgr.* 116
3. marchii, *Sauv.* 116
4. cryptacanthus, *Gthr.* 117
5. sclateri, *Blgr.* 118
6. cunningtoni, *Blgr.* 119
7. liberiensis, *Blgr.* 119
8. loennbergii, *Blgr.* 120
9. goro, *Blgr.* 121
10. ansorgii, *Blgr.* 122
11. congicus, *Blgr.* 123
12. signatus, *Blgr.* 124
13. niger, *Sauv.* 125
14. flavomarginatus, *Blgr.* 125
15. batesii, *Blgr.* 126
16. moorii, *Blgr.* 127
17. shiranus, *Gthr.* 128
18. nigromarginatus, *Blgr.* 129
19. moeruensis, *Blgr.* 130
20. victoriæ, *Blgr.* 131
21. ubangensis, *Blgr.* 132
22. ellipsifer, *Blgr.* 132
23. marmoratus, *Perugia* 133
24. brevicauda, *Blgr.* 133
25. reticulatus, *Blgr.* 134

Volume IV.

1. Mastacembelus (*con.*). Page
26. mellandi, *Blgr.* 135
27. brachyrhinus, *Blgr.* 136
28. stappersii, *Blgr.* 137
29. trispinosus, *Stdr.* 137
30. tæniatus, *Blgr.* 138
31. tanganicæ, *Gthr.* 138
32. longicauda, *Blgr.* 139
33. greshoffi, *Blgr.* 140
34. ophidium, *Gthr.* 141

Subord. X. PLECTOGNATHI.

Fam. 1. TETRODONTIDÆ.

Volume IV.
Page
1. Tetrodon, *L.* 142
1. fahaka, *L.* 143
2. mbu, *Blgr.* 145
3. pustulatus, *A. Murray* 146
4. miurus, *Blgr.* 147
2. Chonerhinus, *Blkr.* 148
1. africanus, *Blgr.* 148

CATALOGUE

OF

AFRICAN FRESH-WATER FISHES.

Suborder VIII. ACANTHOPTERYGII (*cont.*).

Fam. 9. CARANGIDÆ.

Scombriform fishes with the præmaxillaries more or less protractile; body covered with small scales or naked, often with enlarged scutes on each side of the body or of the tail; dorsal spines few, or slender or rudimentary; a more or less developed spine adnate to the soft portion of the anal, often preceded by a pair of spines separated from the rest of the fin; ventral fins thoracic. Vertebræ 24 to 26; ribs behind the transverse processes; epipleurals on the transverse processes, rarely on the ribs.

Seas of the temperate and tropical regions, a few species entering fresh waters.

1. TRACHYNOTUS.

Lacep. Hist. Poiss. iii. p. 78 (1802); Cuv. & Val. Hist. Poiss. viii. p. 398 (1831); Günth. Cat. Fish. ii. p. 480 (1860).

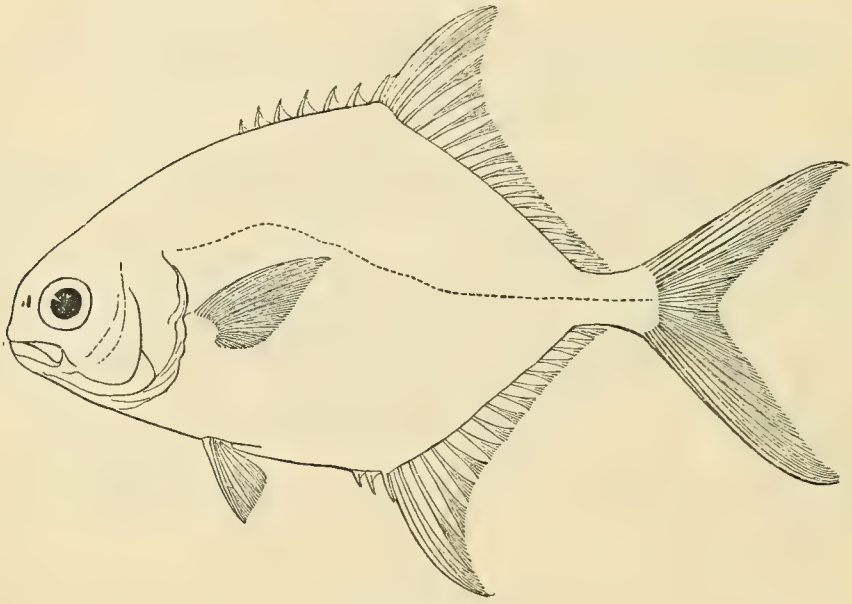
Body strongly compressed, deep, covered with minute scales. Mouth rather small; very small teeth in jaws and on palate, usually disappearing with age. 7 branchiostegal rays; no pseudobranchiæ. Dorsal fin with 5 to 7 short spines, preceded by a smaller one directed forwards. 2 anal spines separated from the principal portion of the fin. Vertebræ 24 (10+14). Air-bladder forked behind.

Atlantic, Indian, and Pacific Oceans.

1. TRACHYNOTUS FALCATUS *.

Labrus falcatus, Linn. Syst. Nat. i. p. 475 (1766).
Gasterosteus ovatus, Linn. t. c. p. 490.
Scomber falcatus, Forsk. Descr. Anim. p. 57 (1775).
Trachinotus falcatus, Lacep. Hist. Poiss. iii. p. 79 (1802).
Trachinotus teraia, Cuv. & Val. Hist. Poiss. viii. p. 418 (1831).
Trachynotus ovatus, Günth. Cat. Fish. ii. p. 481 (1860); Steind. Sitzb. Ak. Wien, lx. i. 1869, p. 709; Klunz. Verh. zool.-bot. Ges. Wien, xx. 1870, p. 449, and Fische Roth. Meer. p. 103 (1884); Sauv. Hist. Madag., Poiss. p. 332 (1891); Steind. Notes Leyd. Mus. xvi. 1894, p. 21.
Trachinotus maxillosus (non C. & V.), Bleek. Nat. Verh. Ges. Haarlem, xviii. 1863, p. 78, pl. xvii.
Trachinotus martini, Steind. Sitzb. Ak. Wien, lx. i. 1869, p. 711, pl. i. fig. 1.

Fig. 1.



Trachinotus falcatus.
St. Louis. ½.

Depth of body $1\frac{2}{3}$ to 2 times in total length, length of head 3 to $3\frac{2}{3}$ times. Profile of snout very steep, nearly vertical in adult; eye as long as or a little longer than snout, 3 to $3\frac{1}{2}$ times in length of head, equal to interorbital width; maxillary extending to below centre or anterior

* In view of the wide distribution and extensive synonymy of this species, I have confined myself to references to African specimens, on which the present description is exclusively based.

DSI

third of eye. 9 or 10 gill-rakers on lower part of anterior arch. Dorsal I+VI–VII 19–21. Anal II, I 16–17. Anterior rays of dorsal and anal more or less produced into falciform lobes. Pectoral a little shorter than head. Caudal deeply forked, longest rays $2\frac{1}{2}$ to 3 times in total length. Silvery, back bluish grey or olive; fins yellow, with a large black blotch on the produced part of the dorsal fin.

Total length 200 millim.

Tropical and Subtropical Atlantic, Indian and Tropical Pacific Oceans.

1–3. Ad. & hgr.	St. Louis, Senegal.	M. P. Delhez (C.).
4. Hgr.	Gambia.	J. S. Budgett, Esq. (P.).
5. Ad., skin.	Zanzibar.	Sir L. Playfair (C.).
6. Ad.	Mombasa.	R. J. Cuninghame, Esq. (P.).

2. TRACHYNOTUS GOREENSIS.

Cuv. & Val. Hist. Poiss. viii. p. 419 (1831); Günth. Cat. Fish. ii. p. 483 (1860); Bleek. Nat. Verh. Ges. Haarlem, xviii. 1863, p. 77, pl. xvi. fig. 3; Steind. Sitzb. Ak. Wien, lx. i. 1869, p. 707; Pellegr. Bull. Soc. Philom. (9) ix. 1907, p. 40.

Trachinotus maxillosus, Cuv. & Val. t. c. p. 420.

Trachinotus myrias, Cuv. & Val. t. c. p. 421; Günth. l. c.

Distinguished from the preceding by more numerous soft rays in the dorsal and anal fins. Dorsal I+VI–VII 20–24. Anal II, I 18–22. A series of 2 to 5 dark dots sometimes present on the lateral line.

Total length 200 millim.

West Coast of Africa, from the Senegal to the Congo.—Type in Paris Museum.

1. Hgr.	Gambia.	J. S. Budgett, Esq. (P.).
2, 3–5. Ad. & yg.	Cape Verde Is.	Rev. R. T. Lowe (P.).
6. Hgr.	„	Capt. Boyd Alexander (P.).
7. Hgr.	Niger.	Mr. L. Fraser (C.).
8. Ad.	W. Africa.	

Fam. 10. PLEURONECTIDÆ.

Bilaterally asymmetrical fishes probably derived from forms similar to the *Zeidæ*. Easily recognised among all other fishes by the skull being twisted in front and the eyes situated on one side of the body, which functionally represents the upper surface, the other side being usually colourless. Dorsal and anal fins much elongate, with soft rays

only; ventral fins with 4 to 7 soft rays and no spine. Vertebræ 24 to 65. Air-bladder absent.

Distributed over the seas of the whole world; a few species confined to or entering fresh waters. The latter, in Africa, belonging to two genera:—

Cleft of mouth wide, with teeth of unequal size; lateral line single; pectoral fins present; caudal fin distinct from dorsal and anal . . . 1. *Citharichthys*, Blkr., p. 4.

Mouth small, teeth minute; two or three lateral lines; no pectoral fins; caudal fin confluent with dorsal and anal . . . . . 2. *Cynoglossus*, Ham. Buch., [p. 5.

1. CITHARICHTHYS.

Bleek. Versl. Ak. Amsterd. xiii. 1862, p. 427; Günth. Cat. Fish. iv. p. 420 (1862).

Eyes on the left side. Mouth wide, with teeth of unequal size, in a single series in both jaws; no teeth on the palate; gill-membranes broadly united below the throat. Dorsal fin originating on the snout; caudal distinct; pectoral and ventral well developed, the latter with 6 rays. Scales rather small, ctenoid on coloured side; lateral line single, straight. Vertebræ 33 to 40.

North Pacific and Tropical Atlantic Oceans; one species ascending rivers in West Africa.

1. CITHARICHTHYS SPILOPTERUS.

Günth. t. c. p. 421; Steind. Sitzb. Ak. Wien, lx. i. 1870, p. 975; Jord. & Goss, Rep. U.S. Fish Comm. f. 1886, p. 276 (1889); Jord. & Everm. Fish. N. Amer. iii. p. 2685 (1898).

Citharichthys guatimalensis, Bleek. Nederl. Tijdschr. Dierk. ii. 1864, p. 73.

Hemirhombus fuscus, Poey, Repert. fis.-nat. Cuba, ii. p. 406 (1868).

Hemirhombus stampflii, Steind. Notes Leyd. Mus. xvi. 1894, p. 52, pl. iii. fig. 3.

Depth of body 2 to $2\frac{1}{3}$ times in total length, length of head $3\frac{1}{2}$ to $3\frac{3}{4}$ times. Eyes nearly exactly superposed, narrowly separated from each other, diameter 5 to 7 times in length of head; jaws equal in front, upper extending to below centre or posterior border of eye; anterior teeth largest. Gill-rakers rather long, 14–16 on lower part of anterior arch. Pectoral about $\frac{1}{2}$ length of head. Dorsal 77–86. Anal 57–64. Caudal rounded. Scales 45–52 $\frac{15-17}{15-18}$. Coloured side brown,

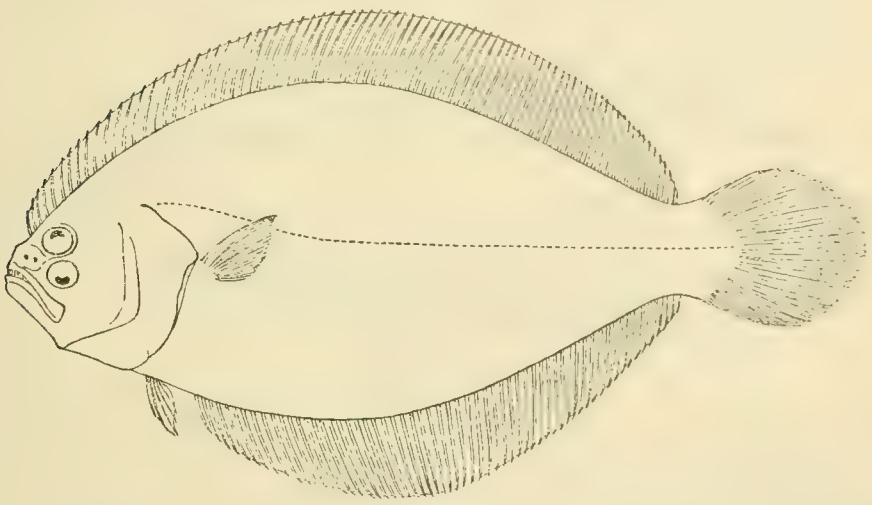
uniform or with darker spots or blotches; a more or less distinct series of small blackish spots along dorsal and anal.

Total length 160 millim.

Both coasts of the Tropical and Subtropical Atlantic; rivers of West Africa, from Senegambia to Angola.

1–2. Ad.	Lagos Lagoon.	Major G. E. Bruce (P.).
3–4. Two of the types.	Niger.	Mr. L. Fraser (C.).
5–8. Ad. & hgr.	Degama, Lower Niger.	Dr. W. J. Ansorge (C.).
9–10. Ad.	Benito R., Spanish Guinea.	G. L. Bates, Esq. (C.).
11–12. Ad.	Chiloango Town.	Dr. W. J. Ansorge (C.).
13–14. Ad.	Bengo R. at Quifangondo, Angola.	,,

Fig. 2.



Citharichthys spilopterus.
Lagos.

2. CYNOGLOSSUS.

Ham. Buchan. Fishes Ganges, p. 32 (1822); Günth. Cat. Fish. iv. p. 492 (1862). *Arelia*, Kaup, Arch. f. Naturg. 1858, p. 107.

Eyes on the left side. Mouth small, asymmetrical, snout produced beyond it and hooked; teeth minute, on the right side only; no teeth on the palate; gill-openings narrow. Dorsal fin originating on the snout; caudal confluent with dorsal and anal; pectoral absent, ventral small, with 4 rays. Scales small, ctenoid on coloured side; two or three lateral lines. Vertebræ 46–60.

Indian Ocean and West Coast of Africa, some species entering fresh waters. A single species in West African rivers.

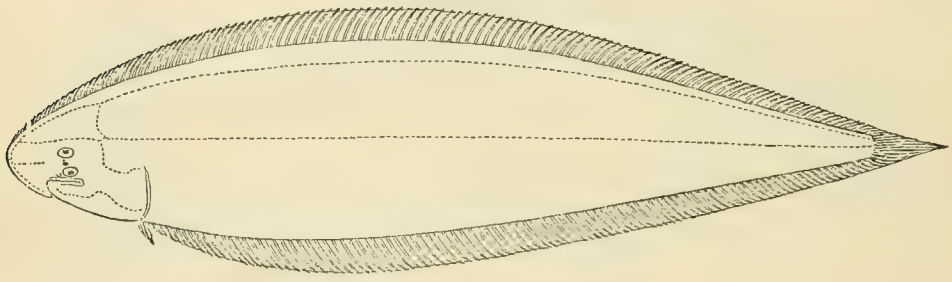
1. CYNOGLOSSUS SENEGALENSIS.

Avelia senegalensis, Kaup, t. c. p. 108.

Cynoglossus senegalensis, Günth. t. c. p. 502; Steind. Sitzb. Ak. Wien, lx. i. 1870, p. 977, and Notes Leyd. Mus. xvi. 1894, p. 50.

Depth of body $4\frac{2}{5}$ to 5 times in total length, length of head 5 to $5\frac{1}{2}$ times. Lower eye farther back than upper, close to mouth; diameter of eye 8 to 12 times in length of head; interorbital space narrower than eye; two nostrils, one between the eyes, the other near the mouth in front of lower eye. Dorsal 126–140; anal 110–120. 120–140 scales in longitudinal series along lateral line, from above gill-opening; 2 lateral lines on coloured side; 17 or 18 longitudinal series of scales

Fig. 3.



Cynoglossus senegalensis.
St. Louis. $\frac{1}{3}$.

between lateral lines at widest point; longitudinal and transverse series of sensory canals on the head. Uniform reddish or purplish brown.

Total length 550 millim.

West Africa, from Senegambia to Angola.—Types in Paris Museum.

1. Ad.	St. Louis, Senegal.	M. P. Delhez (C.).
2–4. Ad. & hgr.	Gambia.	J. S. Budgett, Esq. (P.).
5. Skel.	,,	,,
6. Ad.	Lagos.	Sir A. Moloney (P.).
7. Hgr.	Degama, Lower Niger.	Dr. W. J. Ansorge (C.).
8–10. Hgr.	Old Calabar.	A. Murray, Esq. (P.).
11–13. Ad. & hgr.	Lambarene, Ogowe.	Miss Kingsley (C.).
14. Ad.	Ogowe.	,,
15. Ad.	Quanza R. at Cunga, Angola.	Dr. W. J. Ansorge (C.).

Fam. 11. GOBIIDÆ.

Mouth protractile, the maxillaries excluded from the oral border. Lower pharyngeal bones separate. Two nostrils on each side. Suborbital arch ligamentous or absent. Gill-membranes more or less broadly attached to isthmus. Scapula and coracoid more or less reduced or even vestigial; pterygials large, 4 or 5 in number, forming together a thin plate which is in contact with or narrowly separated from the clavicle; one or two of the pterygials in contact with the coracoid. Ventral fins thoracic, with a feeble spine and 4 or 5 branched rays, often united to form a sucking disk. Anterior part of dorsal fin composed of slender, flexible, non-articulated, simple rays. No lateral line. A more or less developed anal papilla, larger in the males. All or most of the præcaudal vertebræ with transverse processes bearing the ribs. Air-bladder often absent.

Cosmopolitan. Mostly marine or occurring in both salt and fresh water.

Synopsis of the Genera.

I. Ventral fins distinct; two dorsal fins . . 1. *Eleotris*, Gron., p. 7.

II. Ventrals united into a disk, which is not adherent to the belly.

Two dorsal fins; no barbels . . . . . 2. *Gobius*, Art., p. 22.

Two dorsal fins; a pair of nasal and a pair of mental barbels . . . . . 3. *Nematogobius*, Blgr., p. 40.

A single dorsal fin . . . . . 4. *Gobioides*, Lacep., p. 41.

III. Ventrals united into a disk, which is more or less adherent to the belly; two dorsal fins.

Body scaly; movable, slender teeth on the lips . 5. *Sicydium*, C. & V., p. 42.

Body naked, or with the posterior part scaly; jaws with a single series of fixed teeth . . 6. *Lentipes*, Gthr., p. 46.

1. ELEOTRIS.

Gronov. Mus. Ichthyol. p. 16 (1754), part.; Cuv. & Val. Hist. Poiss. xii. p. 217 (1837); Günth. Cat. Fish. iii. p. 105 (1861); Bouleng. Fish. Nile, p. 537 (1907).

Culius, Bleek. Nat. Tijdschr. Nederl. Ind. xi. 1856, p. 411.

Butis, Bleek. t. c. p. 412.

Ophiocara (Gill), Bleek. Arch. Néerl. ix. 1874, p. 303.

Teeth small, conical, with or without curved canines. Two dorsal fins, the anterior with 5 to 8 flexible spines, the posterior with one

simple and 6 to 12 branched rays. Anal similar to second dorsal. Ventral fins distinct. Scales large or small, cycloid or more or less strongly ciliated.

Coasts and rivers between the tropics; most of the species confined to fresh waters. 14 species are known from fresh water in Africa.

Synopsis of the Species.

I. No præopercular spine.

A. Body strongly compressed; head scaly.

1. Dorsals VII–VIII, I 8–9, narrowly separated from each other; anal I 9–10; scales ciliated, 28–32 in longitudinal series.

Head much deeper than broad; caudal peduncle $1\frac{2}{3}$ to 2 times as long as deep . . . . . 1. *E. lebretoni*, Stdr., p. 9.

Head as broad as deep; caudal peduncle $1\frac{1}{2}$ times as long as deep . . . . . 2. *E. pleurops*, Blgr., p. 10.

2. Dorsals VI, I 8, rather widely separated from each other.

Head broader than deep; A. I 8; Sc. 29–32 . 3. *E. butis*, Ham. Buch., p. 10.

Head deeper than broad; A. I 10; Sc. 25–27. 4. *E. tohizonæ*, Stdr., p. 12.

B. Body not or but feebly compressed.

1. Scales ciliated, less than 50 in longitudinal series, 9–14 between dorsal and anal.

a. Head naked; 29–39 scales in longitudinal series.

D. V, I 9; A. I 7; Sc. 29–30; caudal peduncle twice as long as deep . . . . . 5. *E. nana*, Blgr., p. 12.

D. VI, I 8; A. I 5; Sc. 30–32; caudal peduncle twice as long as deep . . . . . 6. *E. uellensis*, Blgr., p. 13.

D. VI, I 8–9; A. I 7; Sc. 32–35; caudal peduncle $1\frac{1}{2}$ to $1\frac{2}{3}$ times as long as deep . 7. *E. kribensis*, Blgr., p. 14.

D. VI, I 8; A. I 7; Sc. 38–39; caudal peduncle $1\frac{2}{3}$ times as long as deep . . . . . 8. *E. leonensis*, Blgr., p. 15.

b. Head scaly; 35–42 scales in longitudinal series, 12–14 between dorsal and anal.

D. VI, I 8; A. I 7; depth of body 4–5 times in total length; caudal peduncle $1\frac{1}{3}$ or $1\frac{1}{2}$ times as long as deep . . . . . 9. *E. ophiocephalus*, C. & V., [p. 15.

D. VI, I 9; A. I 7; depth of body 5 to $5\frac{1}{2}$ times in total length; caudal peduncle nearly twice as long as deep . . . . . 10. *E. madagascariensis*, C. & V., [p. 16.

2. Scales cycloid, 90–95 in longitudinal series, 32–35 between dorsal and anal.

D. VI, I 9; A. I 8 . . . . . 11. *E. africana*, Stdr., p. 17.

II. A strong antrorse spine at angle of præoperculum; D. VI, I 8; A. I 8; 40 scales or more in longitudinal series.

Sc. 40–50; caudal peduncle $1\frac{2}{3}$ to 2 times as long as deep . . . . . 12. *E. vittata*, A. Dum., p. 18.

Sc. 60–70; caudal peduncle twice as long as deep . . . . . 13. *E. monteiri*, O'Sh., p. 20.

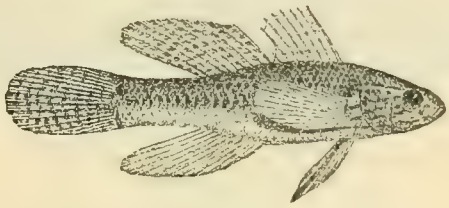
Sc. 60–78; caudal peduncle $1\frac{1}{3}$ to $1\frac{1}{2}$ times as long as deep . . . . . 14. *E. fusca*, Bl. Schn., p. 21.

1. ELEOTRIS LEBRETONI.

Steind. Sitzb. Ak. Wien, lx. i. 1870, p. 947, pl. i. figs. 3 & 4.

Body rather strongly compressed, its depth nearly equal to length of head, $3\frac{1}{3}$ to $3\frac{1}{2}$ times in total length. Head much deeper than broad, flat above, upper surface and sides scaly; snout broad, truncate, as long as or slightly longer than eye; eye perfectly lateral, 4 to $4\frac{1}{2}$ times

Fig. 4.



Eleotris lebretoni.
Type, after Steindachner (*l. c.*).

in length of head and $1\frac{2}{3}$ to 2 times in interorbital width; lower jaw not or but slightly projecting; maxillary not extending beyond vertical of anterior border of eye; no canine teeth; no præopercular spine. Dorsals VII–VIII, I 8–9, narrowly separated from each other, longest soft rays $\frac{2}{3}$ to $1\frac{1}{4}$ times length of head. Anal I 9–10, opposite to second dorsal. Pectoral $\frac{4}{5}$ to once length of head, as long as or a little longer than ventral. Caudal rounded, as long as or a little longer than head. Caudal peduncle $1\frac{2}{3}$ to 2 times as long as deep. Scales strongly ciliated, 28–32 in longitudinal series, 8–10 between origin of dorsal and anal. Brownish with dark spots forming a more or less regular lateral series, or dark olive-brown with yellowish spots or vertical bars on the sides; fins with numerous small dark spots.

Total length 115 millim.

Senegambia to Angola.—Types in Vienna Museum.

1–6. Hgr. & yg.	St. Louis, Senegal.	M. P. Delhez (C.).
7–26. Hgr. & yg.	Lagos.	Major G. E. Bruce (P.).

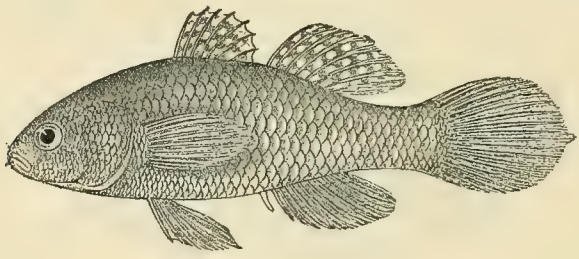
27–30. Ad. & hgr.	Forcados, S. Nigeria.	A. E. Kitson, Esq. (P.).
31–34. Ad.	Chiloango Town.	Dr. W. J. Ansorge (C.).
35–37. Ad.	S. Nicolas R., Little Fish Bay, Angola.	J. J. Monteiro, Esq. (P.).

2. ELEOTRIS PLEUROPS.

Bouleng. Ann. & Mag. N. H. (8) iii. 1909, p. 42.

Body rather strongly compressed, its depth 3 times in total length, length of head $3\frac{1}{2}$ times. Head as broad as deep, flat above, the whole upper surface and sides scaly; snout broad, truncate, as long as eye; eye perfectly lateral, 4 times in length of head and twice in interorbital width; lower jaw not projecting; maxillary not quite

Fig. 5.



Eleotris pleurops.
Type.

reaching to below anterior border of eye; no canine teeth; no præopercular spine. Dorsals VII, I 8, narrowly separated from each other, longest rays $\frac{2}{3}$ length of head. Anal I 10, opposite to second dorsal. Pectoral $\frac{4}{5}$ length of head, ventral $\frac{2}{3}$. Caudal rounded-subacuminate, as long as head. Caudal peduncle $1\frac{1}{2}$ times as long as deep. Scales strongly ciliated, 32 in a longitudinal series, 10 between origin of dorsal and anal. Dark brown, lighter on the belly; fins brown, dorsals with round whitish spots.

Total length 75 millim.

Lower Niger.

1. Type.	Lower Niger.	Mr. J. Paul Arnold (P.).

3. ELEOTRIS BUTIS.

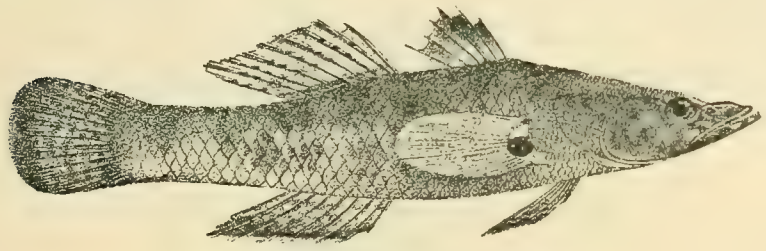
Cheilodipterus butis, Ham. Buchan. Fish. Ganges, p. 57 (1822); Gray & Hardw. Ill. Ind. Zool. ii. pl. xciii. fig. 3 (1834).

Eleotris humeralis, Cuv. & Val. Hist. Poiss. xii. p. 216 (1837); Bleek. Verh. Batav. Gen. xxii. 1849, no. 3, p. 22.

Eleotris butis, Cantor, Cat. Mal. Fish. p. 196 (1850); Günth. Cat. Fish. iii. p. 116 (1861); Playf. & Günth. Fish. Zanzib. p. 73 (1866); Day, Fish. Ind. p. 315, pl. lxvii. fig. 3 (1876); Steind. Sitzb. Ak. Wien, lxxxii. i. 1881, p. 244.
Eleotris melanopterus, Bleek. Nat. Tijdschr. Nederl. Ind. iii. 1852, p. 706.
Butis melanopterus, Bleek. Nederl. Tijdschr. Dierk. ii. 1865, p. 150.
Butis butis, Bleek. Versl. Ak. Amsterd. (2) xi. 1877, p. 62.
Eleotris butis, part., Sauv. Hist. Madag., Poiss. p. 380 (1891).

Body strongly compressed, its depth $4\frac{1}{3}$ to 5 times in total length, length of head $2\frac{2}{3}$ to 3 times. Head much depressed, flat above, broader than deep, nearly twice as long as broad, nearly entirely scaly, with finely serrated ridges above; a groove on each side behind the eye; snout broad, rounded, $1\frac{1}{2}$ (young) to 2 times as long as eye, which

Fig. 6.



Eleotris butis.
India, after Day (*op. cit.*). $\frac{5}{6}$.

is 5 to $6\frac{1}{2}$ times in length of head and 1 to $1\frac{2}{3}$ times in interorbital width; lower jaw projecting; maxillary extending to below anterior third or centre of eye; no canine teeth; no præopercular spine. Dorsals VI, I 8, rather widely separated from each other, longest branched rays $\frac{1}{2}$ to $\frac{2}{3}$ length of head. Anal I 8, its origin slightly behind that of dorsal. Pectoral $\frac{3}{5}$ to $\frac{2}{3}$ length of head, longer than ventral. Caudal rounded, shorter than head. Caudal peduncle $1\frac{3}{4}$ to $2\frac{1}{4}$ times as long as deep. Scales ciliated, 29–32 in longitudinal series, 10–11 between dorsal and anal. Brown, fins with small dark and light spots; anal with a light edge; a large black spot, between two light ones, at the base of the pectoral.

Total length 135 millim.

East Africa to Malay Archipelago *.

1. Ad. Johanna, Comoro Ids. Sir L. Playfair (P.).

* In this, as in other species of wide distribution, only African specimens are listed.

4. ELEOTRIS TOHIZONÆ.

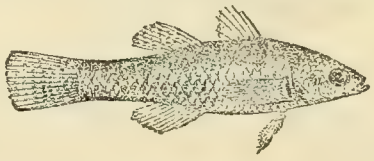
Steind. Sitzb. Ak. Wien, lxxxii. i. 1880, p. 245, pl. ii. fig. 2.
Eleotris butis, part., Sauv. Hist. Madag., Poiss. pl. xli. A. fig. 2 (1891).
Eleotris pectoralis, Regan, Rev. Suisse Zool. ii. 1903, p. 415, pl. xiii. fig. 2.

Head and body compressed; depth of body equal to length of head, $3\frac{3}{4}$ to 4 times in total length. Head longer than deep, scaly; snout shorter than eye, which is $3\frac{1}{2}$ to 4 times in length of head and equals interorbital width; lower jaw slightly projecting; mouth not extending to vertical of anterior border of eye; teeth small, in a narrow band; no canines; no præopercular spine. Dorsals VI, I 8, widely separated from each other. Anal I 10. Pectoral $\frac{3}{4}$ length of head, scarcely longer than ventral. Caudal rounded-subtruncate. Caudal peduncle nearly twice as long as deep. 25–27 scales in longitudinal series, 9–10 in transverse series. Brownish; a blackish bar at base of pectoral; small dark spots on second dorsal and dark streaks across caudal.

Total length 85 millim.

Madagascar.—Types in Vienna Museum.

Fig. 7.



Eleotris tohizonæ.
Type, after Steindachner (*l. c.*).

5. ELEOTRIS NANA.

Bouleng. Ann. & Mag. N. H. (7) viii. 1901, p. 446, and Fish. Nile, p. 538, fig. (1907); Pellegr. Poiss. Bass. Tchad, p. 137, fig. (1914).

Body cylindrical or a little compressed, its depth nearly equal to length of head and 4 times in total length. Head as broad as deep, naked; snout broad, rounded, as long as eye, the diameter of which is 4 times in length of head and nearly equals interorbital width; lower jaw projecting; maxillary extending to below anterior border of eye; no canine teeth; no præopercular spine. Dorsals V, I 9, well separated from each other, longest rays about $\frac{2}{3}$ length of head. Anal I 7, its origin a little behind that of second dorsal. Pectoral about $\frac{3}{4}$ length of head, nearly as long as ventral. Caudal rounded, nearly as long as

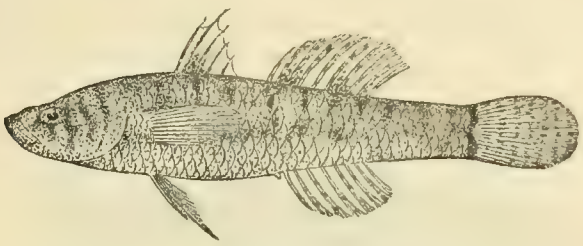
head. Caudal peduncle twice as long as deep. Scales strongly ciliated, 29 or 30 in longitudinal series, 9 between second dorsal and anal. Greyish olive, dotted and marbled with blackish; vertical dark bars on sides of head; a black bar at base of caudal; dorsal, anal, and caudal with small blackish spots.

Total length 38 millim.

Upper Nile, White Nile, and Shari.

1. Type.	Pond near Third Cataract, N. of Kermeh.	L. Loat, Esq. (C.).
2–3. Hgr.	Fashoda, White Nile.	,,
4. Ad.	L. No, ,,	,,
5–7. Hgr.	,, ,,	H. H. King, Esq. (P.).

Fig. 8.



Eleotris nana.
Type (F. N.). × 2.

6. ELEOTRIS UELLENSIS.

Bouleng. Rev. Zool. Afr. ii. 1913, p. 161.

Body cylindrical or a little compressed, its depth $4\frac{1}{3}$ to $4\frac{2}{3}$ times in total length, length of head $3\frac{1}{3}$ to $3\frac{1}{2}$ times. Head a little longer than broad, naked; snout broad, rounded, as long as eye, the diameter of which is $4\frac{1}{2}$ times in length of head and equals interorbital width; lower jaw strongly projecting; maxillary extending to below anterior border of eye; no canine teeth; no præopercular spine. Dorsals VI, I 8, well separated from each other, rays short. Anal I 5, its origin considerably behind that of dorsal. Pectoral $\frac{2}{3}$ length of head, a little longer than ventral. Caudal rounded-subacuminate, nearly as long as head. Caudal peduncle twice as long as deep. Scales strongly ciliated, 30–32 in longitudinal series, 10 between dorsal and anal; belly naked. Yellowish, spotted and speckled with dark brown; a blackish bar at base of caudal, which bears transverse series of brown dots; black spots on dorsal and anal fins.

Total length 35 millim.

Uelle R., Upper Congo.—Types in Congo Museum, Tervueren.

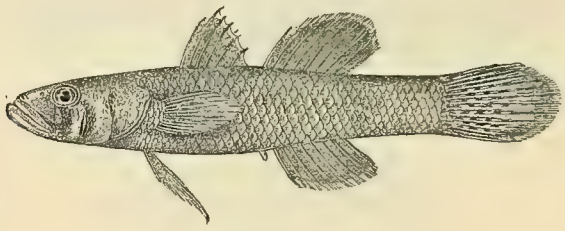
1–2. Two of the types. Dungu, Upper Uelle. Capt. Hutereau (C.).

7. ELEOTRIS KRIBENSIS.

Boulenger, Ann. & Mag. N. H. (7) xx. 1907, p. 52.

Body cylindrical or a little compressed, its depth 4 to 5 times in total length, length of head 3 to $3\frac{1}{2}$ times. Head broader than deep, naked; snout broad, rounded, as long as or a little longer than eye, which is 4 to $4\frac{1}{2}$ times in length of head and equal to or a little less than interorbital width; lower jaw strongly projecting; maxillary extending to below anterior third or centre of eye; no canine teeth; no præopercular spine. Dorsals VI, I 8–9, narrowly

Fig. 9.



Eleotris kribensis.
Type. × $1\frac{1}{2}$.

separated from each other, longest rays not longer than head. Anal I 7, opposite to second dorsal. Pectoral $\frac{2}{3}$ to $\frac{3}{4}$ length of head, as long as or a little longer than ventral. Caudal rounded, a little shorter than head. Caudal peduncle $1\frac{1}{2}$ to $1\frac{2}{3}$ times as long as deep. Scales smooth on the nape, strongly ciliated on the body, 32–35 in longitudinal series, 12 between origin of dorsal and anal. Yellowish to brown, dotted with darker, with or without five or six ill-defined dark cross-bands; a blackish bar at the root of the caudal fin; fins brown or blackish and white-edged in males, whitish with blackish spots in females.

Total length 50 millim.

South Cameroon.

1–20. Types.	Kribi R.	G. L. Bates, Esq. (C.).
21–25. Ad. & hgr.	Ja R.	„
26. Hgr.	Bumba R. at Assobam.	„

8. ELEOTRIS LEONENSIS, sp. n.

Body slightly compressed, its depth $4\frac{1}{2}$ to 5 times in total length, length of head 3 to $3\frac{1}{3}$ times. Head as broad as deep or slightly broader, naked; snout broad, rounded, as long as eye, which is 4 times in length of head and equals interorbital width; lower jaw feebly projecting; maxillary extending to below anterior third or centre of eye; no canine teeth; no præopercular spine. Dorsals VI, I 8, narrowly separated from each other, longest rays much shorter than head. Anal I 7, opposite to second dorsal. Pectoral $\frac{3}{4}$ length of head, longer than ventral. Caudal rounded, a little shorter than head. Caudal peduncle $1\frac{2}{3}$ times as long as deep. Scales ciliated, 38–39 in longitudinal series, 13–14 between origin of dorsal and anal. Yellowish, speckled with brown, with seven ill-defined brown cross-bands; a black bar at the root of the caudal fin; vertical fins with small blackish spots.

Total length 37 millim.

Sierra Leone.

1–2. Types.	Maka.	N. W. Thomas, Esq. (P.).
4–6 7–9. Ad. & hgr.	Pujehun and Kenema.	,,
10. Hgr.	Victoria.	,,

9. ELEOTRIS OPHIOCEPHALUS.

Cuv. & Val. Hist. Poiss. xii. p. 239 (1837); Bleek. Verh. Batav. Gen. xxii. 1849, no. 3, p. 22; Günth. Cat. Fish. iii. p. 107 (1861); Playf. & Günth. Fish. Zanzib. p. 73 (1866); Day, Fish. Ind. p. 312, pl. lxvii. fig. 2 (1876); Günth. Fish. Südsee, ii. p. 185, pl. cxii. fig. A (1877); Sauv. Hist. Madag., Poiss. p. 379, pl. xxxviii. fig. 8, & xli. A. fig. 3 (1891).

Eleotris porocephalus, Cuv. & Val. t. c. p. 237; Cantor, Cat. Mal. Fish. p. 195 (1850); Bleek. Nat. Tijdschr. Nederl. Ind. v. 1853, p. 344; Day, l. c. fig. 1.

Eleotris margaritacea, Cuv. & Val. t. c. p. 240; Bleek. Nat. Tijdschr. Nederl. Ind. viii. 1855, p. 453.

Eleotris porocephaloides, Bleek. Nat. Tijdschr. Nederl. Ind. v. 1853, p. 511; Günth. Cat. iii. p. 109.

Eleotris cantoris, Günth. t. c. p. 108; Kner, Sitzb. Ak. Wien, lviii. i. 1868, p. 328.

Eleotris madagascariensis (non Cuv. & Val.), Playf. & Günth. l. c.

Ophiocara ophiocephalus, Bleek. Versl. Ak. Amsterd. (2) xi. 1877, p. 28.

Ophiocara porocephalus, Bleek. l. c.

Body feebly compressed, its depth 4 to 5 times in total length, length of head 3 to 4 times. Head longer than broad, scaly above and on the sides; a groove on each side behind the eye; a series of groups of papillæ in a groove below lower jaw; snout broad, rounded, 1 (young) to $1\frac{1}{2}$ times as long as eye, which is $4\frac{1}{2}$ to 6 times in length of head and

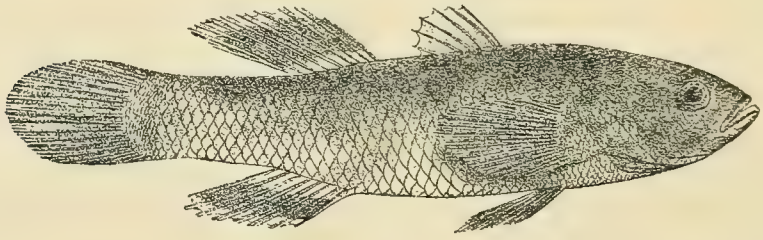
$1\frac{2}{3}$ to $2\frac{1}{2}$ times in interorbital width; lower jaw projecting; maxillary extending to below anterior third or centre of eye; no canine teeth; no præopercular spine. Dorsals VI, I 8, well separated from each other, longest branched rays $\frac{1}{2}$ to $\frac{5}{6}$ length of head. Anal I 7, its origin slightly behind that of dorsal. Pectoral $\frac{2}{3}$ to $\frac{5}{8}$ length of head, longer than ventral. Caudal rounded, as long as or a little shorter than head. Caudal peduncle $1\frac{1}{3}$ to $1\frac{1}{2}$ times as long as deep. Scales ciliated, 35–42 in longitudinal series, 12–14 between dorsal and anal. Dark brown or blackish, with or without yellowish spots, blotches, or irregular cross-bars, soft dorsal and caudal with small black spots; anal, and sometimes also second dorsal, with a light edge.

Total length 260 millim.

East Africa to Polynesia.—Type in Paris Museum.

1–3, 4. Ad. & yg.	Zanzibar.	Sir J. Kirk (P.).
5–6. Ad.	Mozambique.	Sir L. Playfair (P.).
7. Ad.	Silhouette Id., Seychelles, fresh water.	Prof. J. Stanley Gardiner (P.).
8–10. Ad.	Above Côte-d'Or, Praslin Id., Seychelles.	,,
11–13. Ad. & hgr.	Seychelles.	Sir L. Playfair (P.).
14. Ad.	Johanna, Comoro Ids.	,,

Fig. 10.



Eleotris ophiocephalus.
India, after Day (*l. c.*). $\frac{5}{6}$.

10. ELEOTRIS MADAGASCARIENSIS.

Cuv. & Val. Hist. Poiss. xii. p. 240 (1837); Günth. Cat. Fish. iii. p. 111 (1861); Bleek. Poiss. Madag. p. 46 (1875); Sauv. Hist. Madag., Poiss. p. 378, pl. xviii. fig. 1 & xli. A. fig. 4 (1891).

Body feebly compressed, its depth 5 to $5\frac{1}{2}$ times in total length, length of head $3\frac{2}{3}$ to $4\frac{2}{3}$ times. Head longer than broad, scaly except on the snout; a groove on each side behind the eye; snout broad, rounded, not

longer than eye, which is $4\frac{1}{4}$ to $5\frac{1}{2}$ times in length of head, $1\frac{1}{3}$ to 2 times in interorbital width; lower jaw projecting; maxillary extending to below centre of eye; no canine teeth; no præopercular spine. Dorsals VI, I 9, narrowly separated from each other, longest branched rays about $\frac{2}{3}$ length of head. Anal I 7, its origin slightly behind that of dorsal. Pectoral $\frac{3}{4}$ length of head, longer than ventral. Caudal rounded, as long as or a little shorter than head. Caudal peduncle nearly twice as long as deep. Scales ciliated, 38–42 in longitudinal series, 12–13 between dorsal and anal. Dark brown, soft dorsal and caudal with small black spots; soft dorsal and anal with a red edge.

Total length 280 millim.

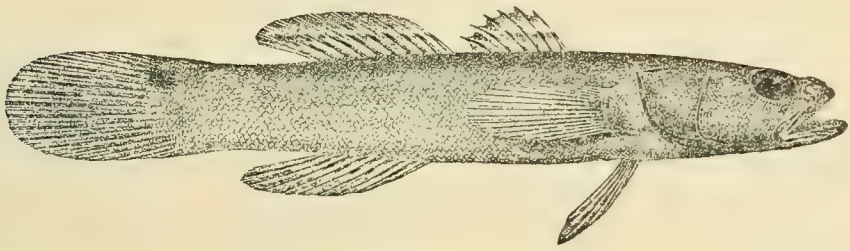
Madagascar.—Type in Paris Museum.

11. ELEOTRIS AFRICANA.

Steind. Sitzb. Ak. Wien, lxxx. i. 1880, p. 153, pl. iii. fig. 1.

Body feebly compressed, its depth $4\frac{1}{3}$ to 5 times in total length; length of head $3\frac{1}{4}$ to $3\frac{1}{2}$ times. Head longer than broad, scaly above from between the eyes and on the cheeks and opercles; snout broad, rounded, 1 to $1\frac{1}{2}$ times as long as eye, which is 5 to 6 times in length of head and $1\frac{1}{3}$ to nearly 2 times in interorbital width; jaws equal in front; maxillary extending to below centre or posterior third of eye;

Fig. 11.



Eleotris africana.
Type, after Steindachner (*l. c.*).

a series of groups of papillæ in a groove below lower jaw; no canine teeth; no præopercular spine. Dorsals VI, I 9, narrowly separated from each other, longest soft rays $\frac{1}{2}$ to $\frac{3}{5}$ length of head. Anal I 8, its origin a little behind that of dorsal. Pectoral $\frac{2}{3}$ to $\frac{3}{4}$ length of head, longer than ventral. Caudal rounded, $\frac{3}{4}$ to $\frac{5}{6}$ length of head. Caudal peduncle $1\frac{2}{5}$ to $1\frac{1}{2}$ times as long as deep. Scales cycloid, 90–95 in

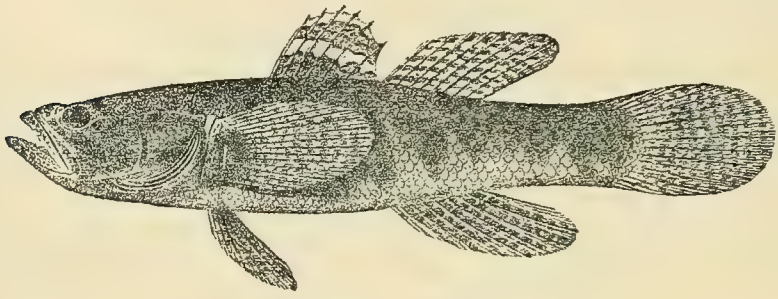
longitudinal series, 32–35 between dorsal and anal. Brown, whitish beneath; fins purplish, lower border of anal and caudal, and outer border of ventrals white; a more or less distinct dark spot or ocellus on the upper part of the caudal fin near its base.

Total length 160 millim.

Rivers of West Africa, from Portuguese Guinea to the mouth of the Congo.—Type in Stuttgart Museum.

1. Ad.	Gunnal, Portug. Guinea.	Dr. W. J. Ansorge (C.).
2–3. Ad. & hgr.	Cross R. district, Old Calabar.	Major W. A. Crawford (P.).
4–9. Ad. & hgr.	Benito R., Spanish Guinea.	G. L. Bates, Esq. (C.).
10. Skel.	,, ,,	,,
11. Ad.	Banana, Congo.	M. P. Delhez (C.).

Fig. 12.



Eleotris vittata.

Type of *Eleotris senegalensis*, after Steindachner (*l. c.*). $\frac{5}{6}$.

12. ELEOTRIS VITTATA.

Eleotris maculata (non Bloch), A. Dum. Arch. Mus. x. 1860, p. 248, pl. xxi. fig. 3.

Eleotris vittata, A. Dum, t. c. p. 249, pl. xxi. fig. 4.

Eleotris (*Culius*) *senegalensis*, Steind. Sitzb. Ak. Wien, lx. i. 1870, p. 949, pl. ii. figs. 1 & 2.

Eleotris (*Culius*) *daganensis*, Steind. t. c. p. 951, pl. ii. figs. 3–5.

Eleotris dumerilii, Sauv. Bull. Soc. Philom. (7) iv. 1880, p. 52.

Eleotris (*Culius*) *büttikoferi*, Steind. Notes Leyd. Mus. xvi. 1894, p. 27, pl. ii. fig. 2.

? *Eleotris* (*Culius*) *pisonis* (non Gmel.), Steind. l. c.

Body feebly compressed, its depth $3\frac{2}{3}$ to $4\frac{2}{3}$ times in total length; length of head $2\frac{4}{5}$ to 3 times. Head longer than broad, scaly above from between the eyes; a groove on each side behind the eye; cheek

naked or with a few scales; operculum more or less scaly; snout broad, rounded, as long as or a little longer than eye, the diameter of which is 5 (young) to 8 times in length of head, $1\frac{1}{4}$ to $2\frac{1}{3}$ times in interorbital width; lower jaw projecting; maxillary extending to below centre or posterior border of eye; no canine teeth; a strong antrorse spine at angle of præoperculum. Dorsals VI, I 8, narrowly separated from each other, longest soft rays $\frac{1}{2}$ to $\frac{3}{5}$ length of head. Anal I 8, its origin a little behind that of dorsal. Pectoral $\frac{2}{3}$ to $\frac{4}{5}$ length of head, longer than ventral. Caudal rounded-subacuminate, shorter than head. Caudal peduncle $1\frac{2}{3}$ to 2 times as long as deep. Scales smooth on the nape, strongly ciliated on the body, 40–50 in longitudinal series, 15–17 between dorsal and anal. Reddish brown or dark brown above, spotted and speckled with darker; a dark lateral band sometimes present; fins yellowish, with dark brown or black transverse bands or series of spots; lower surface of head brown, usually with light spots.

Total length 220 millim.

West Africa, from Senegambia to the Congo.—Type in Paris Museum.

1–2. Ad.	Gambia.	J. S. Budgett, Esq. (P.).
3. Yg.	Corbal R. at Tchitale, Portuguese Guinea.	Dr. W. J. Ansorge (C.).
4–11. Ad., hgr., & yg.	N. Sherbo district, Sierra Leone.	N. W. Thomas, Esq. (P.).
12–13. Types of *E. buettikoferi*.	Grand Cape Mount R., Liberia.	Dr. J. Büttikofer (C.); Leyden Museum (E.).
14. Yg.	Nanna Kru, Liberia.	W. P. Lowe, Esq. (C.).
15. Yg.	Lagos.	Sir A. Moloney (P.).
16–17. Ad. & hgr.	Lagos Lagoon.	Major G. E. Bruce (P.).
18–21. Ad. & hgr.	Assay, Lower Niger.	J. S. Budgett, Esq. (P.).
22. Skel.	,, ,,	,,
23–26. Ad. & yg.	Abo, ,,	Dr. W. J. Ansorge (C.).
27. Ad.	Agberi, ,,	,,
28–30. Hgr. & yg.	Degana, ,,	,,
31–33. Hgr.	Sapelle, ,,	,,
34–35. Hgr. & yg.	Warri, Old Calabar.	Miss Kingsley (C.).
36–50. Ad., hgr., & yg.	Benito R., Spanish Guinea.	G. L. Bates, Esq. (C.).
51. Ad.	Kondo-Kondo, Ogowe.	Miss Kingsley (C.).
52. Ad.	Ngomo, Ogowe.	Dr. W. J. Ansorge (C.).
53, 54. Ad.	Gaboon.	R. B. N. Walker, Esq. (P.).

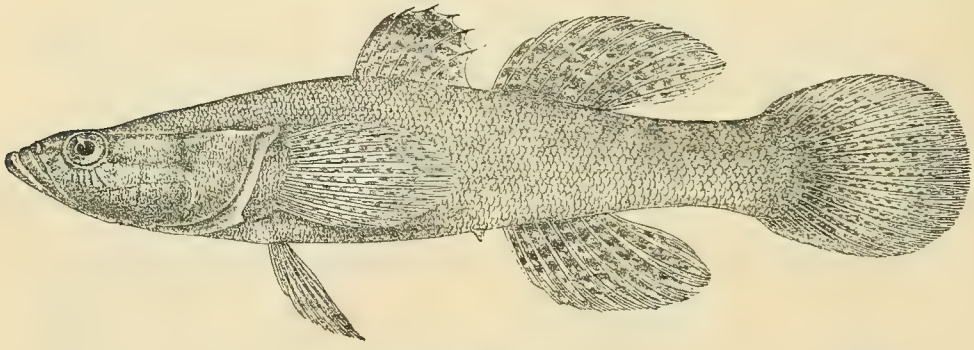
55, 56. Ad.	Gaboon.	
57. Ad.	Chiloango R. near Lella.	Dr. W. J. Ansorge (C.).
58. Ad.	Luculla R., Chiloango.	,,
59. Hgr.	Lulongo R. near Cabinda, Portuguese Congo.	,,

13. ELEOTRIS MONTEIRI.

O'Shaughn. Ann. & Mag. N. H. (4) xv. 1875, p. 147.

Body not or but feebly compressed, its depth 4 to 5 times in total length; length of head 3 to $3\frac{1}{5}$ times. Head longer than broad, scaly above from between the eyes; a groove on each side behind the eye; cheek naked or with a few scales; operculum more or less scaly; snout broad, rounded, as long as or a little longer than eye, the diameter of which is $5\frac{1}{2}$ to 7 times in length of head, $1\frac{1}{2}$ to 2 times in interorbital width; lower jaw projecting; maxillary extending to below centre or posterior border of eye; no canine teeth; a strong antrorse spine at angle of præoperculum. Dorsals VI, I 8, narrowly separated from each other, longest rays $\frac{1}{2}$ to $\frac{3}{5}$ length of head. Anal I 8, its origin a little behind that of dorsal. Pectoral $\frac{2}{3}$ to $\frac{3}{4}$ length of head, longer than ventral. Caudal rounded, shorter than head. Caudal peduncle twice as long as deep. Scales strongly ciliated, 60–70 in longitudinal series, 19–22 between dorsal and anal. Brown, with rather indistinct darker

Fig. 13.



Eleotris monteiri.
Type.

spots, with or without a dark lateral band; fins purplish with numerous small dark and light spots; first dorsal blackish towards the upper border, which is whitish.

Total length 230 millim.

West Africa, from Spanish Guinea to Angola.

1. Type.	San Nicolas R., Little Fish Bay, Angola.	J. J. Monteiro, Esq. (P.).
2. Ad.	Bengo R. at Quifangondo, Angola.	Dr. W. J. Ansorge (C.).
3–4. Ad.	Benito R., Spanish Guinea.	G. L. Bates, Esq. (C.).

14. ELEOTRIS FUSCA.

Pœcilia fusca, Bloch, Schneid. Syst. Ichthyol. p. 453 (1801).

Cheilodipterus culius, Ham. Buchan. Fish. Ganges, p. 55, pl. v. fig. 16 (1822).

Eleotris nigra, Quoy & Gaim. Voy. Uran. Physic., Zool. p. 259, pl. lx. fig. 2 (1824) ; Cuv. & Val. Hist. Poiss. xii. p. 233 (1837) ; Bleek. Verh. Batav. Gen. xxv. no. 4, 1853, p. 105, pl. i. fig. 3.

Eleotris mauritianus, Benn. Proc. Comm. Zool. Soc. i. 1831, p. 166.

Cobitis pacifica, Forst. Descr. Anim. p. 235 (1844).

Culius niger, Bleek. Nat. Tijdschr. Nederl. Ind. xi. 1856, p. 411.

? *Eleotris fornasinii*, Bianconi, Spec. Zool. Mosamb. p. 267, pl. viii. (1858).

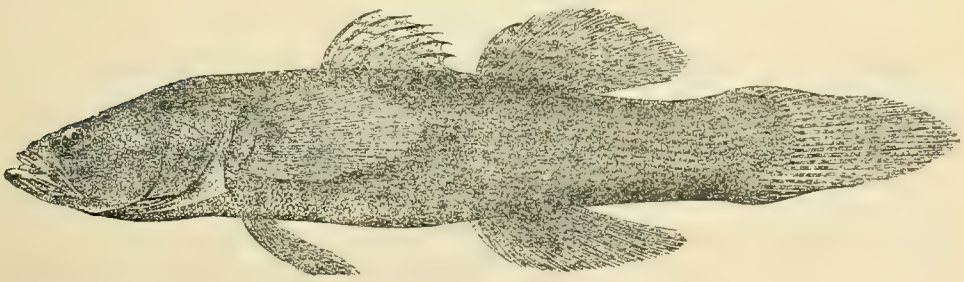
Eleotris fusca, Günth. Cat. Fish. iii. p. 125 (1861) ; Playf. & Günth. Fish. Zanzib. p. 74 (1866) ; Day, Fish. Ind. p. 313, pl. lxv. fig. 7 (1876) ; Günth. Fische Südsee, ii. p. 188 (1877) ; Sauv. Hist. Madag., Poiss. p. 381, pl. xli. A. fig. 1 (1891) ; Pfeff. Thierw. O.-Afr., Fische, p. 7 (1896).

Culius fuscus, Bleek. Versl. Ak. Amsterd. xiv. 1862, p. 111, and (2) xi. 1877, p. 42.

Eleotris soaresi, Playf. & Günth. t. c. p. 74, pl. ix. fig. 4.

Eleotris klunzingeri, Pfeff. Jahrb. Hamb. Wiss. Anst. x. 2, 1893, p. 14, pl. iii. fig. 8, and l. c. fig. 5.

Fig. 14.



Eleotris fusca.

Type of *E. klunzingeri*, after Pfeffer (*l. c.*). $\frac{5}{8}$.

Body feebly compressed, its depth 4 to $4\frac{2}{3}$ times in total length ; length of head 3 to $3\frac{1}{4}$ times. Head longer than broad, scaly except on the snout ; a groove on each side behind the eye ; snout broad, rounded, as long as or a little longer than eye, which is $4\frac{1}{2}$ (young) to 7 times in length of head, 1 to 2 times in interorbital width ; lower jaw projecting ; maxillary extending to below centre or posterior third of

eye ; no canine teeth ; a strong antrorse spine at angle of præoperculum. Dorsals VI, I 8, narrowly separated from each other, longest branched rays $\frac{3}{5}$ to $\frac{3}{4}$ length of head. Anal I 8, its origin slightly behind that of dorsal. Pectoral $\frac{3}{4}$ to $\frac{5}{6}$ length of head, longer than ventral. Caudal peduncle $1\frac{1}{3}$ to $1\frac{1}{2}$ times as long as deep. Scales strongly ciliated, 60–78 in longitudinal series, 17–21 between dorsal and anal. Dark brown to blackish, fins often with small light spots ; first dorsal sometimes with dark and light ocellar spots.

Total length 260 millim.

East Africa to Polynesia.

1. Yg.	Rovuma R. 80 miles from coast.	Sir J. Kirk (P.).
2–4. Types of *E. soaresii*.	Mozambique.	Sir L. Playfair (P.).
5. Ad.	Durban, Natal.	Rev. N. Abraham (P.).
6–11. Ad., hgr., & yg.	Rodriguez, fresh water.	G. Gulliver, Esq. (P.).

2. GOBIUS.

Artedi, Gen. Pisc. p. 28 (1792) ; Cuv. & Val. Hist. Poiss. xii. p. 1 (1837) ; Günth. Cat. Fish. iii. p. 3 (1861).

Oxyurichthys, Bleek. Act. Soc. Indo-Neerl. vi. 1859, p. 120.

Chonophorus, Poey, Mem. Cuba, ii. p. 274 (1861).

Glossogobius (Gill), Bleek. Arch. Néerl. ix. 1874, p. 315.

Awaous, Bleek. t. c. p. 320.

Teeth conical, with or without curved canines. Two dorsal fins, the anterior with 5 to 9 flexible spines, the posterior with one simple and 7 to 28 branched rays. Anal similar to second dorsal. Ventral fins united into a disk, which is not attached to the belly. Scales large or small, cycloid or more or less strongly ciliated.

Coasts and mouths of rivers of the greater part of the world, some species confined to fresh water. 21 species are known from fresh water in Africa.

Synopsis of the Species.

I. Body not or but feebly compressed ; caudal fin not or but slightly longer than head.

A. Pectoral without silk-like upper rays.

1. Dorsal and anal with 7 to 9 branched rays.

Scales 30–36 in longitudinal series; dorsal with 9 branched rays, anal with 8; lower jaw projecting; mouth extending to below anterior border of eye, or not quite so far. 1. *G. giuris*, Ham. Buch., p. 24.

Sc. 40–46; D. 8–9; A. 8–9; lower jaw projecting; mouth extending to below anterior third or centre of eye . . . . 2. *G. rhodopterus*, Gthr., p. 26.

Sc. 26; D. 9; A. 9; mouth subinferior, extending beyond vertical of posterior border of eye; a curved canine tooth on each side of lower jaw . . . . . 3. *G. dewaalii*, M. Web., p. 26.

2. Dorsal and anal with 10 or 11 branched rays.

a. Head not much longer than broad; mouth extending to below anterior border of eye.

Sc. 34–37; interorbital width not $\frac{1}{2}$ diameter of eye; jaws equal in front; depth of body 5 to $5\frac{1}{3}$ times in total length . . . 4. *G. maindroni*, Sauv., p. 27.

Sc. 55–56; interorbital width about $\frac{1}{2}$ diameter of eye; lower jaw projecting; depth of body 4 times in total length; body entirely scaly . . . . . 5. *G. gilchristi*, Blgr., p. 27.

Sc. 56–60; interorbital width about $\frac{1}{2}$ diameter of eye; lower jaw projecting; depth of body 5 times in total length; anterior part of back naked . . . . . 6. *G. nudiceps*, C. & V., p. 28.

Sc. 65; interorbital width equal to diameter of eye; upper jaw slightly projecting; depth of body $4\frac{1}{2}$ times in total length . . . 7. *G. bustamantæi*, Greeff, p. 29.

b. Head $1\frac{1}{2}$ to 2 times as long as broad.

α. Mouth extending to below centre of eye or beyond; jaws equal in front.

Sc. 60; mouth extending to below centre of eye; small scales on the cheek . . . . 8. *G. madagascariensis*, Blkr., [p. 29.

Sc. 65; mouth extending to below posterior border of eye; cheek naked . . . . . 9. *G. macrorhynchus*, Blkr., p. 29.

β. Mouth subinferior, extending to below anterior border of eye or not quite so far.

Sc. 58–64; interorbital width equal to diameter of eye in adult; depth of body 5 to 6 times in total length . . . . . 10. *G. æneofuscus*, Peters, p. 30.

Sc. 61–70; interorbital width $\frac{1}{3}$ to $\frac{3}{5}$ diameter of eye; depth of body 6 to 7 times in total length . . . . . 11. *G. guineensis*, Peters, p. 31.

B. Pectoral with the upper rays silk-like.

Sc. 30 ; dorsal and anal with 7 branched rays ; cheek naked . . . . . 12. *G. samberanensis*, Blkr., p. 32.

Sc. 39–45 ; D. 9 ; A. 8 ; cheek naked . . . 13. *G. soporator*, C. & V., p. 33.

Sc. 45 ; D. 9 ; A. 8 ; cheek scaly. . . . . 14. *G. nigri*, Gthr., p. 34.

Sc. 52–60 ; D. 13–15 ; A. 11–13 ; cheek naked . . . . . 15. *G. paganellus*, L., p. 35.

II. Body more or less strongly compressed.

A. Caudal fin rounded, not longer than head ; dorsal and anal with 10 branched rays.

Sc. 55 ; jaws equal in front ; mouth extending a little beyond vertical of anterior border of eye . . . . . 16. *G. hypselosoma*, Blkr., p. 36.

Sc. 55–63 ; upper jaw projecting beyond lower ; mouth extending to below anterior border of eye or not quite so far. . . . 17. *G. ocellaris*, Brouss., p. 36.

B. Caudal pointed, much longer than head.

Sc. 30–35 ; dorsal with 9–10 branched rays, anal with 8–9 . . . . . 18. *G. schlegelii*, Gthr., p. 37.

Sc. 48–52 ; D. 11 ; A. 9. . . . . 19. *G. hilgendorfi*, Pfeff., p. 38.

Sc. 50 ; D. 11 ; A. 11 ; caudal peduncle twice as long as deep . . . . . 20. *G. polyzona*, Blkr., p. 38.

Sc. 60–63 ; D. 13 ; A. 14 ; caudal peduncle as long as deep . . . . . 21. *G. occidentalis*, Blgr., p. 39.

1. GOBIUS GIURIS.

Ham. Buchan. Fish. Ganges, p. 51, pl. xxxiii. fig. 5 (1822) ; Cuv. & Val. Hist. Poiss. xii. p. 72 (1837) ; Günth. Cat. Fish. iii. p. 21 (1861) ; Playf. & Günth. Fish. Zanzib. p. 70 (1866) ; Peters, Reise Mossamb. iv. p. 20, pl. iii. fig. 2 (1868) ; Kner, Novara, Fische, p. 173 (1869) ; Day, Fish. Ind. p. 294, pl. lxvii. fig. 1 (1876) ; Steind. Sitzb. Ak. Wien, lxxxii. i. 1880, p. 242 ; Sauv. Hist. Madag., Poiss. p. 363, pl. xxxvii. fig. 3 (1891) ; Pfeff. Thierw. O.-Afr., Fische, p. 5 (1896) ; M. Weber, Zool. Jahrb., Syst. x. 1897, p. 144.

Gobius kokius, Cuv. & Val. t. c. p. 68 ; Cantor, Cat. Mal. Fish. p. 180 (1850).

Gobius russelli, Cuv. & Val. t. c. p. 75.

Gobius catebus, Cuv. & Val. t. c. p. 76.

Gobius kora, Cuv. & Val. t. c. p. 77.

Gobius kurpah, Sykes, Tr. Zool. Soc. ii. 1841, p. 352, pl. lxi. fig. 1.

Gobius platycephalus, Peters, Mon. Berl. Ac. 1852, p. 681.

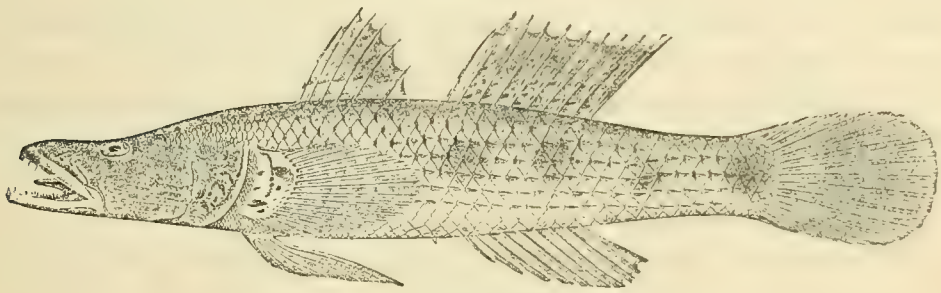
Gobius grandidieri, Playf. Proc. Zool. Soc. 1868, p. 10.

Glossogobius giuris, Bleek. Verh. Ak. Amsterd. xviii. 1879, p. 17.

? *Gobius spectabilis* (non Günth.), M. Weber, l. c.

Body cylindrical or feebly compressed; depth of body $4\frac{1}{3}$ to $5\frac{1}{2}$ times in total length, length of head 3 to $3\frac{1}{3}$ times. Head $1\frac{2}{3}$ to 2 times as long as broad, naked except the occiput; snout depressed, $1\frac{1}{3}$ (young) to $2\frac{1}{2}$ times as long as eye, which is $4\frac{1}{2}$ (young) to $7\frac{1}{2}$ times in length of head and equals interorbital width in adult; lower jaw projecting; mouth extending to below anterior border or anterior third of eye; teeth in a narrow band, outer strongly enlarged and widely spaced. Dorsals VI, I 9, narrowly separated from each other, longest ray $\frac{1}{2}$ to $\frac{2}{3}$ length of head. Anal I 8, opposite to dorsal. Pectoral $\frac{2}{3}$ to $\frac{4}{5}$ length of head. Ventral with a broad basal membrane, its extremity not reaching vent. Caudal rounded, as long as or a little shorter than head. Caudal peduncle about twice as long as deep. Scales ciliated, 30–36 in longitudinal series, 9–11 in transverse series between dorsal and anal. Olive-brown above, with or without dark longitudinal

Fig. 15.



Gobius giuris.

Type of *G. platycephalus*, after Peters (Reise Mossamb.). $\frac{1}{2}$.

streaks and with large dark blotches, some of which usually form a regular series along each side; pectoral, dorsal, and caudal fins with dark spots which may be confluent into bars.

Total length 320 millim.

Coasts and fresh waters of East and South Africa to India, Southern China, and the Malay Archipelago.

1–2. Ad. & hgr.	Zanzibar.	Sir L. Playfair (P.).
3–4. Hgr. & yg.	Rovuma R., 60 miles from coast.	Sir J. Kirk (P.).
5. Ad.	Durban, Natal, in fresh water.	Rev. N. Abraham (P.).
6. Yg.	„ „ „	J. F. Quekett, Esq. (P.).
7. Yg.	Baakens River, Port Elizabeth.	O. West, Esq. (P.).
8. Ad.	Tamatave, Madagascar.	Paris Museum (E.).
9. Hgr.	Imerina, „	Rev. R. Baron (C.).
10. Ad.	Mahanora, „	

2. GOBIUS RHODOPTERUS*.

Gobius reticulatus (non Eichw.), Cuv. & Val. Hist. Poiss. xii. p. 50 (1837); Moreau, Poiss. France, ii. p. 217 (1881).

Gobius rhodopterus, Günth. Cat. Fish. iii. p. 16 (1861); Playf. & Letourn. Ann. & Mag. N. H. (4) viii. 1871, p. 386.

Gobius sp., Gervais, Zool. Pal. Génér. p. 202, pl. xlv. fig. 2 (1869).

Body cylindrical; depth of body $4\frac{1}{2}$ to 5 times in total length, length of head $3\frac{1}{2}$ to $3\frac{2}{3}$ times. Head $1\frac{2}{3}$ times as long as broad, naked; snout rounded, as long as or a little shorter than eye, which is $3\frac{1}{2}$ to $4\frac{1}{2}$ times in length of head; interorbital space very narrow; lower jaw projecting; mouth extending to below anterior third or centre of eye; teeth in a villiform band; no canines. Dorsal VI, I 8–9, narrowly separated from each other, longest rays $\frac{1}{2}$ to $\frac{3}{5}$ length of head. Anal I 8–9, opposite to second dorsal. Pectoral $\frac{3}{4}$ to $\frac{4}{5}$ length of head. Ventral with a broad basal membrane, reaching vent. Caudal rounded, $\frac{3}{4}$ to $\frac{4}{5}$ length of head. Caudal peduncle twice as long as deep. Scales thin, ciliated, 40–46 in longitudinal series, 12–14 in transverse series between dorsal and anal; anterior part of back naked. Pale brownish-olive, irregularly spotted and reticulated with darker; dorsal and caudal fins with small dark spots; first dorsal with a large black spot posteriorly in the male.

Total length 45 millim.

Mediterranean, entering rivers in Algeria.—Types in Paris Museum.

1–4. Ad. & hgr.	Near Guelma, Algeria.	Sir L. Playfair (P.).
5–8. Ad.	Garan Achkel, „	R. Gurney, Esq. (P.).

3. GOBIUS DEWAALII.

M. Weber, Zool. Jahrb., Syst. x. 1897, p. 145.

Depth of body $4\frac{1}{4}$ times in total length, length of head nearly $3\frac{1}{2}$ times. Head naked except on the gill-cover; snout shorter than eye, which is nearly 4 times in length of head; interorbital region very narrow; mouth subinferior, extending to beyond vertical of posterior border of eye; teeth in two series, with a curved canine on each side of the lower jaw. Dorsals VI, I 9. Anal I 9. Ventral reaching vent. Caudal rounded. Scales ciliated, 26 in longitudinal series, 10 in transverse

* This species is probably identical with *G. microps*, Kröyer, Danm. Fiske, i. p. 416 (1840), and Collett, Vidensk. Selsk. Förh. Christiania, 1874, p. 168, of the northern coasts of Europe, which has been confounded with *G. minutus*, Gmel. *Cf.* E. G. Boulenger, Proc. Zool. Soc. 1911, p. 40.—Only the African specimens are described here.

series. Yellowish brown, with large dark brown spots, forming a zigzag band on each side; dorsal and anal fins with irregular dark spots; a deep black spot on the hinder third of the first dorsal.

Total length 40 millim.

Umgeni R. and Illovo R., Natal.—Types in Amsterdam University.

4. GOBIUS MAINDRONI.

Sauv. Bull. Soc. Philom. (7) iv. 1880, p. 40.

Body cylindrical or feebly compressed; depth of body 5 to $5\frac{1}{3}$ times in total length, length of head $3\frac{3}{4}$ to $4\frac{1}{4}$ times. Head a little longer than broad, naked, or scaly on the occiput; snout rounded, as long as or a little longer than eye, which is $3\frac{2}{3}$ (young) to $4\frac{1}{2}$ times in length of head; interorbital space very narrow; jaws equal in front; mouth extending to below anterior border of eye; teeth very small, in a narrow band. Dorsal VI, I 10–11, narrowly separated from each other; third simple ray produced in male, as long as head. Anal I 9–10, opposite to second dorsal. Pectoral a little shorter than head. Ventral not reaching vent, with a broad basal membrane. Caudal rounded-subacuminate, as long as head. Caudal peduncle little longer than deep. Scales strongly ciliated, 34–37 in longitudinal series, 10 in transverse series between dorsal and anal. Yellowish brown, with dark brown spots and cross-bands; dorsals and caudal with dark brown spots.

Total length 55 millim.

Senegal, Sierra Leone, Niger.—Type in Paris Museum.

1. Ad.	N. Sherbo district, Sierra Leone.	N. W. Thomas, Esq. (P.).
2–5. Ad., hgr., & yg.	Niger.	Mr. J. Paul Arnold (P.).

5. GOBIUS GILCHRISTI.

Bouleng. in Gilchrist, Mar. Invest. S. Afr. i. 1898, p. 8.

Body feebly compressed; depth of body 4 times in total length, length of head $3\frac{1}{4}$ to $3\frac{1}{3}$ times. Head $1\frac{1}{4}$ times as long as broad, naked; snout rounded, very convex, as long as or a little longer than eye, which is $4\frac{1}{2}$ to 5 times in length of head and about twice interorbital width; lower jaw projecting; mouth extending to below anterior border of eye; teeth forming a villiform band. Dorsals VI, I 11, contiguous; longest rays about $\frac{1}{2}$ length of head. Anal I 10, opposite to second dorsal. Pectoral a little shorter than head. Ventral with a broad basal membrane with a short process on each side, reaching vent or not quite

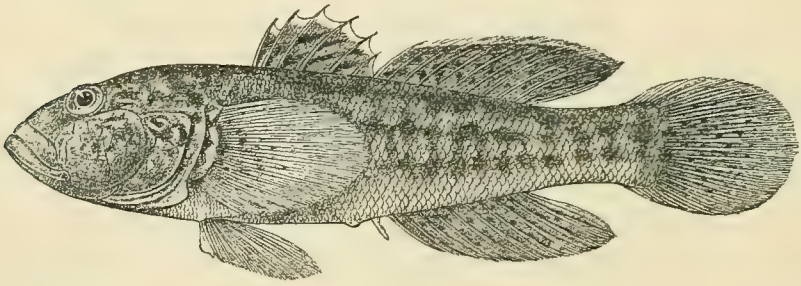
so far. Caudal rounded, $\frac{3}{4}$ to $\frac{4}{5}$ length of head. Caudal peduncle $1\frac{1}{2}$ times as long as deep. Scales ciliated, 55–56 in longitudinal series, 17–19 in transverse series between dorsal and anal. Olive above, spotted and marbled with blackish, dirty yellowish beneath; fins dark grey, first dorsal streaked with black, second dorsal and anal with small black spots, both dorsals edged with whitish.

Total length 110 millim.

Cape of Good Hope.

1–3. Types. Little Brak R., Mossel Bay. Dr. J. D. F. Gilchrist (P.).

Fig. 16.



Gobius gilchristi.
Type.

6. GOBIUS NUDICEPS.

Cuv. & Val. Hist. Poiss. xii. p. 65 (1837); Bleek. Nat. Tijdschr. Nederl. Ind. xxi. 1860, p. 73; Günth. Cat. Fish. iii. p. 13 (1861); Kner, Novara, Fische, p. 177 (1869).

Gobius gymnauchen (non Bleek.), M. Weber, Zool. Jahrb., Syst. x. 1897, p. 144.

Body cylindrical; depth of body about 5 times in total length, length of head $3\frac{1}{2}$ times. Head $1\frac{1}{3}$ times as long as broad, naked; snout not longer than eye, which is 4 to 5 times in length of head, and about twice interorbital width; lower jaw projecting; mouth extending to below anterior border of eye; teeth in a band, outer enlarged. Dorsals VI, I 10. Anal I 10. Caudal rounded. Anterior part of back arched; scales ciliated, 56–60 in longitudinal series, 22 in transverse series between dorsal and anal. Brown or blackish olive; a deep violet or black band, edged with whitish, at the base of the pectoral fin; first dorsal with dark and light lines and the margin yellow; second dorsal with oblique blackish lines; caudal dotted with blackish.

Total length 110 millim.

Cape of Good Hope and Natal (Illovo R.).—Types in Paris Museum.

7. GOBIUS BUSTAMANTÆI.

Greeff, Sitzb. Ges. Nat. Marburg, 1882, no. 2, p. 37, and 1884, p. 50.

Body slightly compressed; depth of body $4\frac{1}{2}$ times in total length, length of head $3\frac{1}{3}$ times. Head $1\frac{1}{3}$ times as long as broad, naked; snout, in adult, 3 times as long as eye, which is 6 times in length of head and equals interorbital width; upper jaw slightly overlapping lower; mouth extending to below anterior border of eye; teeth in a band, outer enlarged. Dorsal VI, I 11. Anal I 11. Caudal rounded. Scales feebly denticulate, 65 in longitudinal series. Olive-brown, belly whitish; vertical fins with brown spots.

Total length 200 millim.

San Thomé Id., Gulf of Guinea.

1. Ad. Rio do Ouro. Dr. J. A. Henriques (P.).

8. GOBIUS MADAGASCARIENSIS.

Bleek. Arch. Néerl. ii. 1867, p. 405, and Poiss. Madag. p. 49, pl. xxi. fig. 2 (1875); Sauv. Hist. Madag., Poiss. p. 373, pl. xl. fig. 4 (1891).

Body cylindrical; depth of body $4\frac{5}{6}$ times in total length, length of head $3\frac{1}{2}$ times. Head $1\frac{1}{2}$ times as long as broad, naked except on the cheeks, which bear scattered small scales; snout pointed, a little more than twice as long as eye, which is nearly 6 times in length of head and a little less than interorbital width; jaws equal in front; mouth extending to below centre of eye; teeth in broad bands, outer scarcely enlarged. Dorsals VI, I 10, well separated from each other, longest rays $\frac{2}{3}$ length of head. Anal I 10, opposite to second dorsal. Pectoral $\frac{3}{4}$ length of head. Ventral not reaching vent. Caudal rounded, slightly shorter than head. Caudal peduncle about $1\frac{2}{3}$ times as long as deep. Scales ciliated, 60 in longitudinal series, 18 in transverse series between dorsal and anal. Olive-brown above, greenish white beneath; fins purplish brown, dorsals, caudal, and pectorals with the rays orange.

Total length 200 millim.

Sambirano R., N.W. Madagascar.—Type in Leyden Museum.

9. GOBIUS MACRORHYNCHUS.

Bleek. Arch. Néerl. ii. 1867, p. 403, and Poiss. Madag. p. 48, pl. xx. fig. 2 (1875); Sauv. Hist. Madag., Poiss. p. 372, pl. xxxix. fig. 7 (1891).

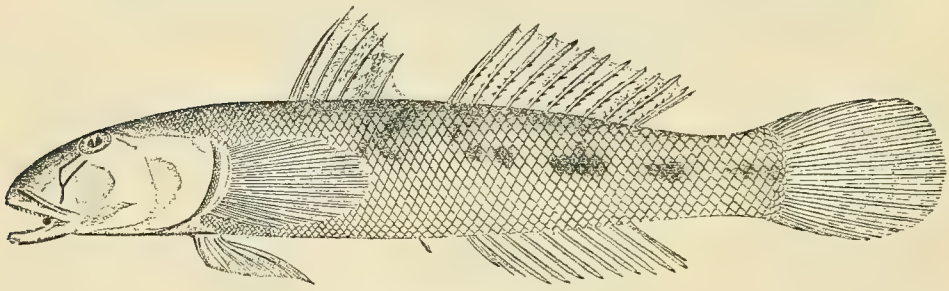
Body cylindrical; depth of body 5 times in total length, length of head $3\frac{1}{4}$ times. Head $1\frac{2}{5}$ times as long as broad, naked; snout pointed,

twice as long as eye, which is nearly 6 times in length of head and a little less than interorbital width; jaws equal in front; mouth extending to below posterior border of eye; teeth in broad bands, outer scarcely enlarged. Dorsals VI, I 10, well separated from each other, longest rays about $\frac{1}{2}$ length of head. Anal I 10, opposite to second dorsal. Pectoral $\frac{2}{3}$ length of head. Ventral not reaching vent. Caudal rounded, shorter than head. Caudal peduncle nearly twice as long as deep. Scales ciliated, 65 in longitudinal series, 20 in transverse series between dorsal and anal. Olive-brown above, pinkish olive beneath; fins dark brown, with the rays orange.

Total length 265 millim.

Sambirano R., N.W. Madagascar.—Type in Leyden Museum.

Fig. 17.



Gobius æneofuscus.
Type, after Peters (Reise Mossamb.). $\frac{5}{6}$.

10. GOBIUS ÆNEOFUSCUS.

Peters, Mon. Berl. Ac. 1852, p. 681; Günth. Cat. Fish. iii. p. 61 (1861); Peters, Reise Mossamb. iv. p. 18, pl. iii. fig. 1 (1868); Steind. Sitzb. Ak. Wien, lxxxii. i. 1880, p. 242.

Gobius banana (non Cuv. & Val.), Sauv. Hist. Madag., Poiss. p. 376, pl. xxxviii. fig. 1 (1891).

Body cylindrical or feebly compressed; depth of body 5 to 6 times in total length, length of head $3\frac{2}{5}$ to $3\frac{4}{5}$ times. Head $1\frac{1}{2}$ to nearly 2 times as long as broad, naked; snout rounded, with curved upper profile, $\frac{1}{3}$ to $\frac{2}{5}$ length of head; eye 4 (young) to 7 times in length of head, equal to interorbital width in adult ($1\frac{1}{2}$ in young); mouth subinferior, extending to below anterior border of eye or not quite so far; teeth in narrow villiform bands. Dorsal VI, I 10, rather widely separated, longest rays about $\frac{1}{2}$ length of head. Anal I 10, opposite

to second dorsal. Pectoral $\frac{2}{3}$ to $\frac{3}{4}$ length of head. Ventral with a broad basal membrane, terminating at a great distance from vent. Caudal rounded, shorter than head. Caudal peduncle $1\frac{1}{2}$ to $1\frac{2}{3}$ times as long as deep. Scales strongly ciliated, 58–64 in longitudinal series, 16–18 in transverse series between dorsal and anal. Olive-brown or green above, metallic bronzy or golden on the sides, white beneath; more or less distinct dark brown or black spots or marblings above; two dark oblique lines directed forwards from the eye to the mouth; second dorsal with numerous small blackish spots; caudal with transverse series of black spots, which may be confluent into irregular cross-bars.

Total length 160 millim.—Grows to 250 millim.

Fresh waters of East and South-East Africa and Madagascar.—Types in Berlin Museum.

1–2. Ad. & hgr.	Mkata R., German E. Africa.	Dr. E. J. Baxter (C.).
3. One of the types.	Sena, Mozambique.	Dr. W. Peters (P.).
4–5. Ad.	Tete, „	Mr. C. H. B. Grant (C.); C. D. Rudd, Esq. (P.).
6. Skel.	„ „	„ „
7. Ad.	Umsindusi R., Pietermaritzburg.	Dr. E. Warren (P.).
8 Ad.	Imerina, Madagascar.	Rev. R. Baron (C.).

The following specimen is referred with doubt to this species:—

9. Ad.	Niger.	Mr. J. Paul Arnold (P.).

11. GOBIUS GUINEENSIS.

Gobius æneofuscus, var. *guineensis*, Peters, Mon. Berl. Ac. 1876, p. 248.

Gobius (*Chonophorus*) *tajasica* (non Licht.), Steind. Notes Leyd. Mus. xvi. 1894, p. 25.

Gobius æneofuscus (non Peters), Günth. Ann. & Mag. N. H. (6) xvii. 1896, p. 267.

Gobius guineensis, Boulenq. Proc. Zool. Soc. 1902, ii. p. 329.

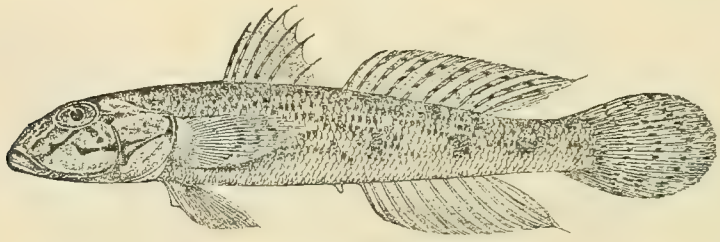
Body cylindrical; depth of body 6 to 7 times in total length, length of head $3\frac{1}{4}$ to $3\frac{2}{3}$ times. Head $1\frac{3}{4}$ to 2 times as long as broad, naked; snout rounded, with curved upper profile, about $\frac{1}{3}$ length of head; eye $3\frac{1}{2}$ (young) to 6 times in length of head, $1\frac{1}{2}$ to 3 times interorbital width; mouth subinferior, extending to below anterior border of eye or not quite so far; teeth in 2 or 3 rows in each jaw, outer rather large. Dorsals VI, I 10, well separated, longest rays about $\frac{1}{2}$ length of head. Anal I 10, opposite to second dorsal. Pectoral $\frac{3}{4}$ to $\frac{5}{6}$ length of

head. Ventral with a broad basal membrane, terminating at a great distance from vent. Caudal rounded, shorter than head. Caudal peduncle $1\frac{2}{3}$ to $1\frac{3}{4}$ times as long as deep. Scales strongly ciliated, 61–70 in longitudinal series, 14–16 in transverse series between dorsal and anal. Yellow, with small crimson or purplish-brown spots and dots, some of which may form a regular lateral series, or be confluent into cross-bars on the back, or form two oblique series or lines directed forwards from the eye to the mouth; dorsal and caudal spotted with crimson or purplish brown; pectoral sometimes with crimson cross-bars.

Total length 155 millim.

Fresh waters of West Africa, from Sierra Leone to Angola.—Types in Berlin Museum.

Fig. 18.



Gobius guineensis.
Chiloango.

1–3. Ad. & hgr.	N. Sherbo district, Sierra Leone.	N. W. Thomas, Esq. (P.).
4–5. Ad.	Tano R., Gold Coast.	Dr. H. G. F. Spurrell (P.).
6–13. Hgr. & yg.	Agberi, Lower Niger.	Dr. W. J. Ansorge (C.).
14–15. Yg.	Abo, „	„
16. Hgr.	Assay, „	„
17–20. Hgr.	Benito R., Spanish Guinea.	G. L. Bates, Esq. (C.).
21–30. Hgr. & yg.	Kondo-Kondo, Ogowe.	Miss Kingsley (C.).
31–32. Hgr.	Lambarene, „	Dr. W. J. Ansorge (C.).
33–34. Ad.	Chiloango Town.	„
35–37. Ad. & hgr.	Bengo R. at Quifangondo, Angola.	„

12. GOBIUS SAMBERANENSIS.

Bleek. Arch. Néerl. ii. 1867, p. 417, and Poiss. Madag. p. 57, pl. xix. fig. 2 (1875); Sauv. Hist. Madag., Poiss. p. 355, pl. xxxix. fig. 5 (1891).

?*Gobius vergeri*, Bleek. ll. cc. pp. 418, 58, pl. xix. fig. 1.

Body cylindrical; depth of body 5 to nearly 6 times in total length,

length of head 3 to $3\frac{1}{2}$ times. Head nearly twice as long as broad, naked; snout obtuse, very convex, a little shorter than eye, which is $3\frac{1}{2}$ times in length of head and double interorbital width; jaws equal in front; mouth extending to below anterior border of eye; teeth in rather broad bands, outer enlarged. Dorsals VI, I 7, narrowly separated from each other, longest rays $\frac{2}{3}$ length of head. Anal I 7, opposite to second dorsal. Pectoral a little shorter than head, with silk-like upper rays. Ventral not reaching vent. Caudal rounded, a little shorter than head. Caudal peduncle twice as long as deep. Scales 30 in longitudinal series, 8–9 in transverse series between dorsal and anal. Olive above, greenish pink beneath; head with five purplish-black narrow cross-bars; numerous irregular brown spots on the sides; first dorsal with two narrow purplish-black bars; second dorsal and caudal with black spots.

Total length 33 millim.

Sambirano River, N.W. Madagascar.—Types believed to be lost.

13. GOBIUS SOPORATOR *.

Cuv. & Val. Hist. Poiss. xii. p. 56 (1837); Günth, Cat. Fish. iii. p. 26 (1861); Steind. Notes Leyd. Mus. xvi. 1894, p. 26.

Body feebly compressed; depth of body 4 to $4\frac{2}{3}$ times in total length, length of head 3 to $3\frac{1}{2}$ times. Head $1\frac{1}{4}$ to $1\frac{1}{3}$ times as long as broad, naked; snout rounded, as long as or slightly longer than eye, which is 4 to $4\frac{1}{2}$ times in length of head; interorbital space very narrow; mouth terminal, extending to below anterior third or fourth of eye; teeth in a narrow villiform band, outer enlarged. Dorsals VI, I 9, narrowly separated from each other, longest rays about $\frac{1}{2}$ length of head. Anal I 8, its origin a little behind that of second dorsal. Pectoral $\frac{2}{3}$ to $\frac{3}{4}$ length of head, upper rays filiform, silk-like, free. Ventral not extending to vent, with a broad basal membrane, each side of which is pointed and produced. Caudal rounded, a little shorter than head. Caudal peduncle $1\frac{1}{4}$ to $1\frac{1}{2}$ times as long as deep. Scales ciliated, 39–45 in longitudinal series, 14–16 in transverse series between dorsal and anal. Brown, with darker streaks along the series of scales and with irregular dark blotches or with dark cross-bands; fins brown, dorsal and caudal with small darker spots.

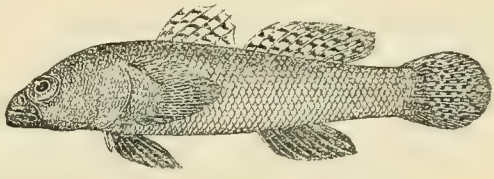
* The present description is based exclusively on African specimens.—The American synonymy has not been worked out.

Total length 110 millim.

Atlantic coasts and neighbouring fresh waters of Tropical America and Tropical Africa.—Types in Paris Museum.

1. Ad.	Ogun R. at Aro, near Abeokuta, Lagos.	Major G. E. Bruce (P.).
2–3. Ad.	Degama, Lower Niger.	Dr. W. J. Ansorge (C.).
4–12. Ad. & hgr.	Fernando Po.	Mr. E. Seimund (C.).
13. Skel.	„	„
14. Ad.	Banana, Lower Congo.	M. P. Delhez (C.).
15. Ad.	„ „	Brussels Museum (P.).

Fig. 19.



Gobius nigri.
Type.

14. GOBIUS NIGRI.

Günth. Cat. Fish. iii. p. 27 (1861).

Body feebly compressed; depth of body 4 times in total length, length of head 3 times. Head $1\frac{1}{4}$ times as long as broad, scaly except the snout; snout rounded, as long as eye, which is 4 times in length of head; interorbital space very narrow; mouth terminal, extending to below anterior fourth of eye; teeth in a narrow villiform band, outer enlarged. Dorsals VI, I 9, narrowly separated from each other, longest rays $\frac{1}{2}$ length of head. Anal I 8, its origin a little behind that of second dorsal. Pectoral $\frac{2}{3}$ length of head, upper rays filiform, silk-like, free. Ventral not extending to vent, with a broad basal membrane, each side of which is pointed and produced. Caudal rounded, shorter than head. Caudal peduncle $1\frac{1}{4}$ times as long as deep. Scales ciliated, 45 in longitudinal series, 15 in transverse series between dorsal and anal. Brown; dorsals, caudal, and pectoral with darker spots, anal and ventral blackish.

Total length 65 millim.

Niger.

1. Type.	Niger.	Mr. L. Fraser (C.).

15. GOBIUS PAGANELLUS.

Linn. Syst. Nat. i. p. 449 (1766); Günth. Cat. Fish. iii. p. 52 (1861); Steind. Sitzb. Ak. Wien, lvii. i. 1868, p. 413; Playf. & Letourn. Ann. & Mag. N. H. (4) viii. 1871, p. 386; Day, Fish. Gr. Brit. p. 162, pl. lii. fig. 2 (1881); Moreau, Poiss. France, ii. p. 225 (1881); Holt & Byrne, Rep. Fisher. Ireland, ii. App. iii. 1901, p. 9, pl. i. figs. 1 & 2.

Gobius bicolor, Cuv. & Val. Hist. Poiss. xii. p. 19 (1837); Moreau, t. c. p. 228.

Gobius maderensis, Cuv. & Val. t. c. p. 55; Günth. t. c. p. 413.

Gobius melanio, Pall. Zoogr. Ross.-As. iii. p. 157 (1840); Nordm. in Demid. Voy. Russ. Mér. iii. p. 412, pl. xi. fig. 1 (1840).

Gobius niger, var., Lowe, Proc. Zool. Soc. 1839, p. 84, and Tr. Zool. Soc. iii. 1842, p. 9.

Body cylindrical or feebly compressed; depth of body $4\frac{2}{3}$ to $5\frac{3}{4}$ times in total length, length of head $3\frac{1}{2}$ to 4 times. Head $1\frac{1}{2}$ to $1\frac{3}{5}$ times as long as broad, scaly from between the eyes, naked on the cheek; snout rounded, as long as or shorter or a little longer than eye, which is 3 (young) to $4\frac{1}{2}$ times in length of head; interorbital space very narrow; mouth terminal, extending to below anterior fourth or centre of eye; teeth in a villiform band, outer much enlarged. Dorsals VI, I 13–15, contiguous or narrowly separated, longest rays $\frac{1}{2}$ or $\frac{3}{5}$ length of head. Anal I 11–13, origin a little behind that of second dorsal. Pectoral $\frac{3}{4}$ to $\frac{5}{6}$ length of head, upper rays filiform, silk-like, free. Ventral not extending to vent, with a broad basal membrane, each side of which is pointed and produced. Caudal rounded, shorter than head. Caudal peduncle $1\frac{1}{4}$ to $1\frac{1}{2}$ times as long as deep. Scales strongly ciliated, 52–60 in longitudinal series, 16–20 in transverse series between dorsal and anal. Greyish or yellowish brown to dark brown or blackish, with darker spots or marblings; second dorsal and caudal fins with dark or red spots, which may form bands; a more or less distinct white or yellow band on the top of the first dorsal.

Total length 150 millim.

Atlantic coasts from the British Isles to Madeira and the Canaries; Mediterranean. Sometimes entering fresh waters.

1. Ad.	Seybouse R. near Guelma, Algeria.	Sir L. Playfair (P.).
2–7. Ad. & hgr.	Madeira.	A. J. Arendrup, Esq. (P.).
8–13, 14. Ad., hgr., & yg.	„	
15–22. Ad.	Great Salvage Id.	Hon. C. Baring and W. R. Ogilvie-Grant, Esq. (P.).

16. GOBIUS HYPSELOSOMA.

Bleek. Arch. Néerl. ii. 1867, p. 407, and Poiss. Madag. p. 51, pl. xxi. fig. 1 (1875) ; Sauv. Hist. Madag., Poiss. p. 368, pl. xxxix. fig. 6 (1891).

?*Gobius isognathus*, Bleek. Il. cc. p. 411 & p. 53, pl. xv. fig. 1 ; Sauv. op. cit. p. 371, pl. xl. fig. 1.

Body compressed ; depth of body $3\frac{2}{3}$ to 4 times in total length, length of head $3\frac{1}{3}$ times. Head $1\frac{2}{3}$ to $1\frac{3}{4}$ times as long as broad, naked ; snout a little shorter than postocular part of head ; eye 5 times in length of head, $\frac{1}{2}$ to $\frac{2}{3}$ width of interorbital region ; jaws equal in front ; mouth extending a little beyond vertical of anterior border of eye ; teeth in villiform bands. Dorsals VI, I 10, well separated from each other, longest rays $\frac{2}{3}$ length of head. Anal I 10, opposite to second dorsal. Pectoral $\frac{4}{5}$ length of head. Ventral not reaching vent. Caudal rounded, a little shorter than head. Caudal peduncle $1\frac{1}{3}$ times as long as deep. Scales ciliated, 55 in longitudinal series, 14–15 in transverse series between dorsal and anal. Purplish brown, fins dark, dorsals and anal with light spots.

Total length 160 millim.

Sambirano R., N.W. Madagascar.—Types in Leyden Museum.

17. GOBIUS OCELLARIS.

Brousson. Ichthyol. pl. ii. (1782) ; Cuv. & Val. Hist. Poiss. xii. p. 98 (1837) ; Günth. Cat. Fish. iii. p. 64 (1861), and Fische Südsee, iii. p. 177, pl. cviii. fig. C (1877) ; Sauv. Hist. Madag., Poiss. p. 375, pl. xl. fig. 2 & xli. fig. 5 (1891).

Gobius nigripinnis, Cuv. & Val. t. c. p. 101.

Gobius melanopterus, Bleek. Arch. Néerl. ii. 1867, p. 409, and Poiss. Madag. p. 52, pl. xx. fig. 1 (1875).

Awaous ocellaris, Bleek. Verh. Ak. Amsterd. xviii. 1879, p. 17.

Body compressed ; depth of body 4 to 5 times in total length, length of head $3\frac{1}{6}$ to $3\frac{1}{2}$ times. Head $1\frac{1}{2}$ to 2 times as long as broad, scaly on occiput, cheek, and upper part of gill-cover ; snout as long as postocular part of head in adult, shorter in young ; eye $4\frac{1}{2}$ (young) to 7 times in length of head, equal to or a little less than interorbital width in adult ; mouth inferior, extending to below anterior border of eye or not quite so far ; teeth in villifrom bands. Dorsals VI, I 10, well separated from each other, longest rays about $\frac{1}{2}$ length of head. Anal I 10, opposite to second dorsal. Pectoral $\frac{2}{3}$ to $\frac{3}{4}$ length of head. Ventral

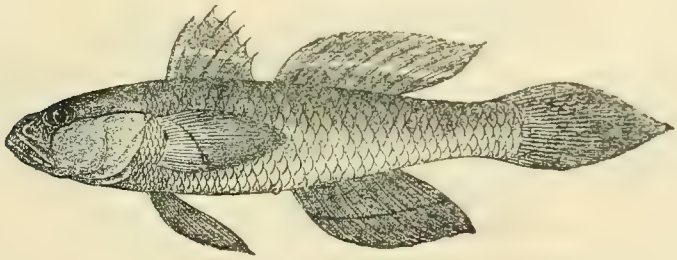
with broad basal membrane, its extremity widely separated from vent. Caudal rounded, $\frac{3}{4}$ to once length of head. Caudal peduncle $1\frac{1}{4}$ to $1\frac{1}{2}$ times as long as deep. Scales ciliated, 55–63 in longitudinal series, 15–17 in transverse series between dorsal and anal. Brownish, with darker dots and small spots; first dorsal with a large black spot in its posterior third; second dorsal and caudal with small dark spots; fins sometimes dark purplish brown.

Total length 210 millim.

Madagascar and Mascarene Islands; Tahiti, Samoa, Rarotonga, and Viti Levu; confined to fresh waters.

1. Ad.	Tamatave, Madagascar.	Paris Museum (E.).
2–3. Yg.	Rodriguez.	G. Gulliver, Esq. (P.).

Fig. 20.



Gobius schlegelii.
Bissau.

18. GOBIUS SCHLEGELII.

Günth. Cat. Fish. iii. p. 46 (1861); Bleek. Nat. Verh. Gen. Haarlem, (2) xviii. 1863, p. 103, pl. xiii. fig. 1.

Body strongly compressed; depth of body 4 to 5 times in total length, length of head $3\frac{1}{3}$ to $3\frac{2}{3}$ times. Head $1\frac{3}{4}$ to 2 times as long as broad, naked; snout rounded, as long as or a little longer than eye, which is 4 to 5 times in length of head; interorbital space very narrow; lower jaw projecting; mouth extending to below anterior border or anterior third of eye; teeth in a narrow band, outer enlarged; a curved canine on each side of lower jaw often present. Dorsals VI, I 9–10, narrowly separated, longest ray $\frac{2}{3}$ to $\frac{4}{5}$ length of head. Anal I 8–9, opposite to second dorsal. Pectoral as long as or a little longer than head. Ventral reaching vent or not quite so far, with a broad basal membrane, each side of which is pointed and produced. Caudal pointed, the median rays more or less produced, $1\frac{1}{2}$ to 2 times

length of head. Caudal peduncle $1\frac{1}{2}$ times as long as deep. Scales ciliated, 30–35 in longitudinal series, 8–9 in transverse series between dorsal and anal. Olive, darker on the back, fins purplish; a dark curved purple line on each side of the head, from the angle of the mouth to the upper border of the gill-cover; a more or less distinct, yellowish, dark-edged spot on the base of the pectoral; anal with a black longitudinal streak; a series of light spots may be present on the dorsals; caudal with or without small light spots.

Total length 135 millim.

Portuguese Guinea to Lower Niger.—Type in Leyden Museum.

1–2. Hgr.	Bissau, Portuguese Guinea.	Dr. W. J. Ansorge (C.).
3–4. Hgr.	Lagos.	J. Cadman, Esq. (P.).
5. Ad.	Gold Coast (?).	Mrs. Burton (P.).
6–10. Hgr.	Degama, Lower Niger.	Dr. W. J. Ansorge (C.).
11–12. Hgr.	Agberi, „	„

19. GOBIUS HILGENDORFI.

Pfeff. Thierw. O.-Afr., Fische, p. 5 (1896).

Depth of body $4\frac{1}{2}$ to $5\frac{1}{2}$ times in total length, length of head $3\frac{1}{2}$ to $3\frac{2}{3}$ times. Snout $1\frac{1}{2}$ times diameter of eye, upper profile strongly curved; interorbital region narrow with strong ridges; lower jaw slightly projecting beyond upper, which extends to below centre of eye; 3 series of teeth; no canines. Dorsals VI, I 11; third and fourth rays of first dorsal much produced, extending to beyond middle of second dorsal. Anal I 9. Caudal pointed, $1\frac{2}{3}$ times as long as head. Scales ciliated, 48–52 in longitudinal series, 13 in transverse series. Almost colourless, except a triangular purplish-brown spot below the eye, its point on the extremity of the upper jaw; a dark longitudinal streak on the first dorsal.

Total length 115 millim.

Kingani River, East Africa.—Types in Hamburg Museum.

20. GOBIUS POLYZONA.

Bleek. Arch. Néerl. ii. 1867, p. 413, and Poiss. Madag. p. 55, pl. xvii. fig. 1 (1875); Sauv. Hist. Madag., Poiss. p. 370, pl. xl. fig. 3 (1891).

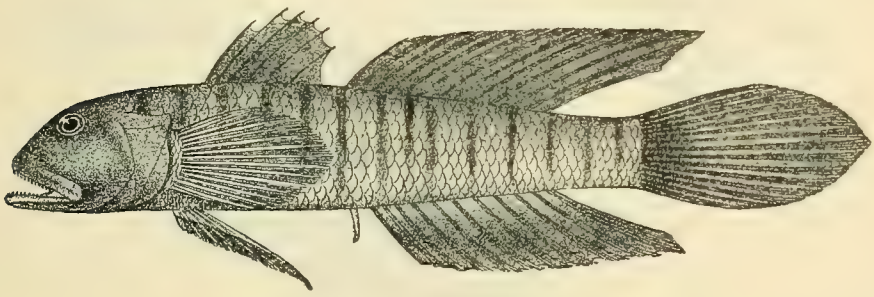
Body strongly compressed; depth of body 5 times in total length, length of head 4 times. Head twice as long as broad, naked; snout rounded, as long as eye, which is nearly 5 times in length of head;

interorbital region narrow; jaws equal in front; mouth extending to below posterior border of eye; teeth in a band, outer largest. Dorsals VI, I 11, well separated from each other; posterior rays longest, as long as head. Anal I 11, opposite to second dorsal. Pectoral as long as head, with filamentous upper rays. Ventral nearly reaching vent. Caudal pointed, $1\frac{1}{2}$ times as long as head. Caudal peduncle $1\frac{1}{2}$ times as long as deep. Scales ciliated, 50 in longitudinal series, 12 in transverse series between dorsal and anal. Pinkish yellow, head purplish; 14 or 15 purplish-black narrow bars on each side of the body; dorsal and caudal purplish black, anal purple.

Total length 145 millim.

Sambirano R., N.W. Madagascar.—Type in Leyden Museum.

Fig. 21.



Gobius polyzona.
Type, after Bleeker (*l. c.*). $\frac{3}{4}$.

21. GOBIUS OCCIDENTALIS.

Gobius (*Oxyurichthys*) *occidentalis*, Bouleng. Ann. & Mag. N. H. (8) iv. 1909, p. 431.

Body strongly compressed; depth of body $5\frac{1}{2}$ times in total length, length of head 5 times. Head twice as long as broad; snout rounded, as long as eye, which is 4 times in length of head; interorbital region very narrow, with two strong ridges; jaws equal in front; mouth extending to below centre of eye; teeth in a single series; no canines; cheek and gill-cover scaly. Dorsals VI, I 13, separated by a mere notch; third simple ray longest, as long as head. Anal I 14. Pectoral as long as head. Ventral terminating at a great distance from vent, with a broad basal membrane, each side of which is pointed and produced. Caudal acutely pointed, twice as long as head. Caudal peduncle as long as deep. Scales ciliated, 60–63 in longitudinal series, 12–13 in trans-

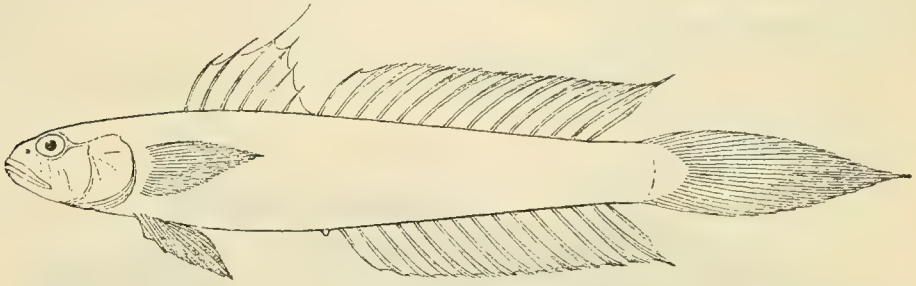
verse series between dorsal and anal. Yellowish; a dark spot on the gill-cover, and another at the root of the caudal fin.

Total length 120 millim.

Portuguese Guinea and Lower Niger.

1. Type.	Gunnel R., affluent of Cacheu R., Portuguese Guinea.	Dr. W. J. Ansorge (C.).
2–3. Ad.	Bissau, Portuguese Guinea.	,,
4–6. Ad.	Degama, Lower Niger.	,,

Fig. 22.



Gobius occidentalis.
Type.

3. NEMATOGOBIUS.

Bouleng. Ann. & Mag. N. H. (8) vi. 1910, p. 560.

Distinguished from *Gobius* by the presence of a pair of barbels on the chin and of one to the anterior nostrils.

A single species.

1. NEMATOGOBIUS ANSORGII.

Bouleng. l. c. and Ann. Mus. Congo, Zool. ii. 3, p. 26, pl. xvii. fig. 8 (1912).

Body feebly compressed; depth of body 5 to 6 times in total length, length of head $3\frac{1}{3}$ to $3\frac{1}{2}$ times. Head naked, $1\frac{1}{2}$ to $1\frac{2}{3}$ times as long as broad, broader than deep; snout short, rounded; jaws equal in front or lower slightly projecting; eye 4 to $4\frac{1}{2}$ times in length of head; interorbital space very narrow; mouth extending to below centre of eye; teeth in villiform bands; no canines; very regular series of sensory papillæ on the head; mental barbels nearly as long as eye, nasals shorter. Dorsals VI, I 11–12, contiguous; longest ray $\frac{1}{2}$ to $\frac{2}{3}$ length of head. Anal I 9, originating a little further back than second

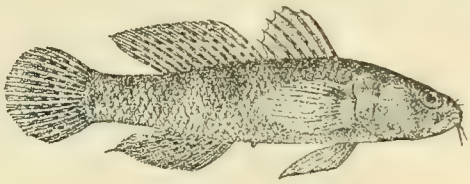
dorsal. Pectoral as long as head or slightly shorter. Ventral not reaching vent, with well-developed anterior membrane. Caudal rounded, as long as or a little shorter than head. Caudal peduncle $1\frac{1}{2}$ to $1\frac{2}{3}$ times as long as deep. Scales ciliated, 37–40 in longitudinal series, 10–11 in transverse series between dorsal and anal. Yellowish brown above, speckled with brown, with more or less distinct dark cross-bands; dorsal and caudal fins spotted with dark brown; a round blackish spot on upper part of pectoral fin, near its base.

Total length 80 millim.

West Africa.

1–2. Types.	Bengo R. at Cabiri, Angola.	Dr. W. J. Ansorge (C.).
3–5. Ad. & hgr.	Bengo R., at Quifangondo.	,,
6. Ad.	Chiloango Town.	,,
7. Ad.	Geba R., Portuguese Guinea.	,,

Fig. 23.



Nematogobius ansorgii.
Type (A. M. C.).

4. GOBIOIDES.

Lacep. Hist. Poiss. ii. p. 576 (1800); Cuv. & Val. Hist. Poiss. xii. p. 139 (1837).

Amblyopus, Cuv. & Val. t. c. p. 157; Günth. Cat. Fish. iii. p. 133 (1861).

Teeth conical, in a band, the anterior enlarged. Body much elongate and compressed. A single very long dorsal fin, with the 6 or 7 anterior rays simple; anal also very long. Ventral fins united into a disk, which is not attached to the belly. Scales absent or very small or rudimentary.

Coasts, estuaries, and fresh waters near the sea, within the tropics.—One species in West Africa, closely allied to *G. broussoneti*, Lacep., from the East Coast of S. America.

1. GOBIOIDES ANSORGII.

Bouleng. Ann. & Mag. N. H. (8) iv. 1909, p. 431.

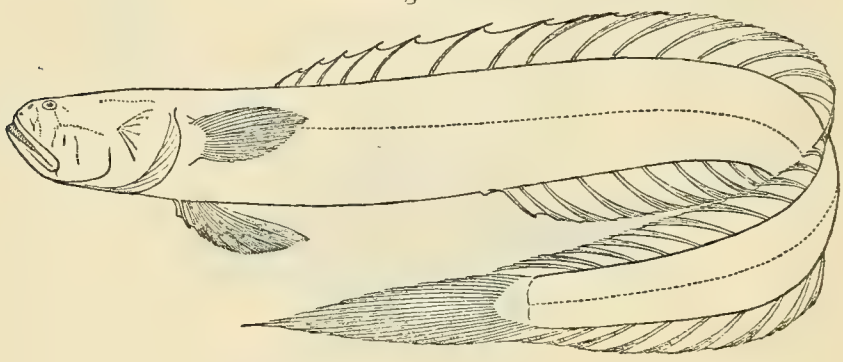
Depth of body 8 to 10 times in total length, length of head 6 to 7 times. Snout $\frac{1}{4}$ length of head; eye very small; lower jaw prominent; maxillary extending to beyond vertical of eye; very regular series of sensory papillæ on the head. Dorsal VI–VII 19–21, rays subequal, $\frac{2}{5}$ length of head. Caudal nearly twice as long as head, acutely pointed. Scales very small. Head and back greyish, the rest of the body yellowish; fins white.

Total length 280 millim.

R. Mansoa (tidal), Portuguese Guinea.

1–3. Types. Port Mansoa. Dr. W. J. Ansorge (C.).

Fig. 24.



Gobioides ansorgii.
Type. $\frac{2}{3}$.

5. SICYDIUM.

Cuv. & Val. Hist. Poiss. xii. p. 167 (1837); Günth. Cat. Fish. iii. p. 91 (1861); Ogilvie-Grant, Proc. Zool. Soc. 1884, p. 153.

Sicyopterus, Gill, Proc. Ac. Philad. 1860, p. 101.

Cotylopus, Guichen. in Maillard, Notes Réunion, ii. Add. C, p. 9 (1862).

Small, movable, slender labial teeth in both jaws, attached to the bone by ligament, those on the lower lip directed horizontally outwards; lower jaw with a series of widely set conical teeth. Two dorsal fins, the anterior with 5 to 7 flexible spines, the posterior with one simple and 10 to 12 branched rays. Anal similar to second dorsal. Ventral fins united into a cup-shaped disk, more or less adherent to the belly. Scales small, strongly ciliated.

Fresh waters near the sea, within the tropics; breeding in the sea. Five species in Africa.

Synopsis of the Species.

I. Movable teeth in upper jaw unicuspid; conical teeth in lower jaw subequal . . 1. *S. brevifilis*, Ogilvie-Grant, [p. 43.

II. Movable teeth in upper jaw tricuspid.

A. Conical teeth in lower jaw subequal.

Head as broad as deep; nape naked . . . . 2. *S. acutipinnis*, Guich., p. 44.

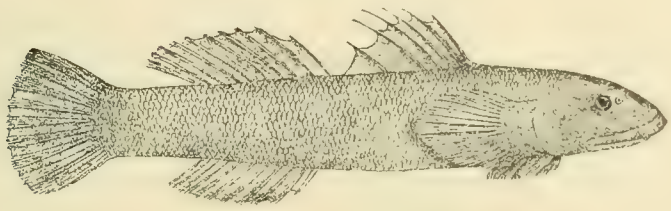
B. Anterior conical teeth in lower jaw much larger than the others.

Head broader than deep; nape and belly scaly . . . . . 3. *S. laticeps*, C. & V., p. 44.

Head as broad as deep; nape and belly scaly . 4. *S. lagocephalum*, Pall., p. 45.

Belly naked . . . . . 5. *S. parvipinnis*, Guich., p. 45.

Fig. 25.



Sicydium brevifilis.
Type, after Ogilvie-Grant (*l. c.*). $\frac{5}{6}$.

1. SICYDIUM BREVIFILIS.

Ogilvie-Grant, Proc. Zool. Soc. 1884, p. 158, pl. xii. fig. 1; Pietschmann, Jahrb. Nass. Ver. Naturk. lxvi. 1913, p. 183.

Depth of body $5\frac{1}{2}$ to 6 times in total length, length of head $3\frac{2}{3}$ to $4\frac{1}{2}$ times. Head as deep as broad; eye 4 (young) to 7 times in length of head, 1 to $1\frac{2}{3}$ times in interorbital width; mouth extending to below centre or posterior border of eye; movable labial teeth unicuspid; mandibular teeth subequal. Dorsals VI, I 10, narrowly separated, second to fifth simple rays produced into short filaments. Anal I 10. Pectoral a little shorter than head. Caudal rounded. Body entirely scaly; 70–75 scales in longitudinal series. Yellowish brown or pale olive, uniform or with ill-defined dark spots on the sides; anal fin with a brown and white margin.

Total length 105 millim.

Cameroon.

1. Type.	Cameroon.	Sir A. Smith (P.).
2–3. Yg.	Kribi R. at Kribi.	G. L. Bates, Esq. (C.).

2. SICYDIUM ACUTIPINNIS.

Cotylopus acutipinnis, Guichen. in Maillard, Notes Réunion, ii. Add. C, p. 10 (1862) ; Bleek. Arch. Néerl. ix. 1874, p. 313.

Sicydium acutipinne, Ogilvie-Grant, Proc. Zool. Soc. 1884, p. 159.

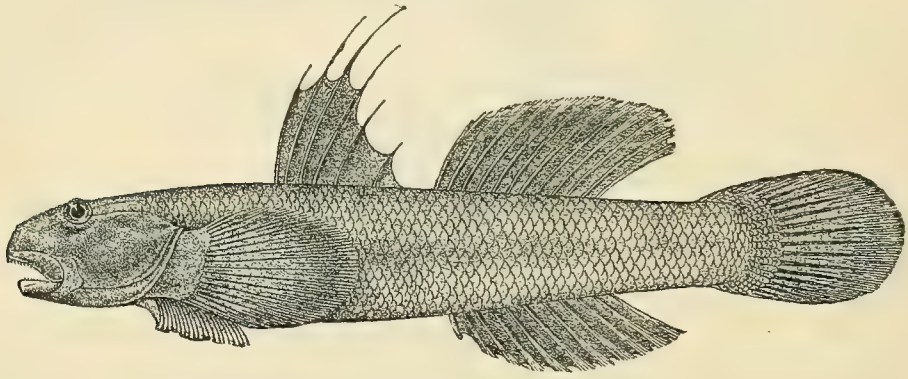
Depth of body 6 to 7 times in total length, length of head $5\frac{1}{2}$ times. Head as broad as deep; eye 5 to 6 times in length of head, equal to interorbital width; mouth extending to below centre of eye; movable labial teeth tricuspid; mandibular teeth subequal. Dorsals VI, I 10; last ray of second dorsal produced, as long as head. Anal I 10. Pectoral as long as head. Nape naked. About 70 scales in longitudinal series. Blackish brown, dorsal fins with lighter variegations.

Total length 90 millim.

Réunion, Mascarene Islands.—Type in Paris Museum.

1. Ad. Réunion. Paris Museum (P.).

Fig. 26.



Sicydium laticeps.
After Sauvage (*l. c.*).

3. SICYDIUM LATICEPS.

Cuv. & Val. Hist. Poiss. xii. p. 177 (1837) ; Günth. Cat. Fish. iii. p. 93 (1861) ; Sauv. Hist. Madag., Poiss. p. 378, pl. xl. A. fig. 2, and xlvii. fig. 5 (1891).

Depth of body $5\frac{2}{3}$ times in total length, length of head 5 times. Head broader than deep; eye about 5 times in length of head; mouth extending to below anterior border of eye; movable labial teeth tricuspid; anterior mandibular teeth much longer than the others. Dorsals VI, I 10, rather widely separated; second to fourth simple rays produced into filaments. Anal I 10. Pectoral as long as head.

Body entirely scaly; about 60 scales in longitudinal series. Blackish brown.

Total length 110 millim.

Réunion, Mascarene Islands.—Type in Paris Museum.

4. SICYDIUM LAGOCEPHALUM.

Gobio, Koelreuter, Nov. Acta Petropol. ix. 1764, p. 428, pl. ix. figs. 3 & 4.

Gobius lagocephalus, Pall. Spicil. Zool. viii. p. 14, pl. ii. figs. 6 & 7 (1774).

Sicydium lagocephalum, Cuv. & Val. Hist. Poiss. xii. p. 174 (1837); Günth. Cat. Fish. iii. p. 92 (1861); Kner, Novara, Fische, p. 181 (1869); Ogilvie-Grant, Proc. Zool. Soc. 1884, p. 161.

Sicyopterus lagocephalus, Bleek. Verh. Ak. Amsterd. xviii. 1879, p. 17.

Depth of body 5 to $5\frac{1}{2}$ times in total length, length of head $4\frac{2}{3}$ to 5 times. Head as broad as deep; eye 5 to 6 times in length of head, $1\frac{1}{2}$ times in interorbital width; mouth extending to below centre of eye; movable labial teeth tricuspid; anterior mandibular teeth much larger than the others, curved, canine-like. Dorsals VI, I 11; third and fourth rays of first dorsal produced into short filaments. Anal I 10. Pectoral as long as head. Body entirely scaly; 60–65 scales in longitudinal series. Brown, uniform or clouded with darker; second dorsal with dark dots, anal with a black and white margin.

Total length 90 millim.

Mauritius and Réunion, Mascarene Islands; Nicobar Islands (?).

1. Ad.	Réunion.	Paris Museum (P.).
2. Ad.	—— ?	

5. SICYDIUM PARVIPINNIS.

Cotylopus parvipinnis, Guichen. in Maillard, Notes Réunion, ii. Add. C, p. 11 (1862).

Sicydium parvipinne, Ogilvie-Grant, Proc. Zool. Soc. 1884, p. 170.

Depth of body about 6 times in total length. Eye double interorbital width; mouth not extending to below anterior border of eye. Dorsals VII, I 10; rays of first dorsal not produced. Anal I 10. Pectoral as long as head. Belly naked. Yellow, each scale bordered with brown; a black spot on the first dorsal; anal edged with black.

Total length 110 millim.

Réunion, Mascarene Islands.—Type in Paris Museum.

6. LENTIPES.

Sicyogaster (non Barnev.), Gill, Proc. Ac. Philad. 1860, p. 102.

Lentipes, Günth. Cat. Fish. iii. p. 96 (1861); Ogilvie-Grant, Proc. Zool. Soc. 1884, p. 170.

Closely allied to the preceding, but with a series of fixed teeth in the jaws, movable teeth absent or present on the lower jaw only, and body naked or with the posterior part covered with cycloid scales.

Rivers of San Thomé and the Sandwich Islands.

1. LENTIPES BUSTAMANTÆI.

Sicydium bustamantéi, Greeff, Sitzb. Ges. Nat. Marburg, 1884, p. 50 (*nomen nudum*).

Body feebly compressed, its depth 7 to 8 times in total length; length of head $5\frac{1}{2}$ to $6\frac{1}{2}$ times in total length. Head $1\frac{2}{3}$ times as long as broad; snout shorter than the eye, which is 3 to $3\frac{1}{2}$ times in length of head and exceeds interorbital width; mouth small, inferior. Dorsals VI, I 10, widely separated from each other. Anal I 8. Caudal rounded. Body nearly entirely naked. Uniform yellowish.

Total length 25 millim.

San Thomé, Gulf of Guinea.

1–20. Types. Rio do Ouro. Dr. J. A. Henriques (P.).

Fam. 12. OSPHROMENIDÆ.

A superbranchial respiratory organ, situated in a cavity above the gills. Mouth protractile, the maxillaries excluded from the oral border; palate toothed. Suborbitals with more or less developed internal laminæ, supporting the eye; lower pharyngeal bones separate; gill-membrane grown to isthmus; 4 to 6 branchiostegal rays. Two nostrils on each side. Spinous dorsal more or less developed. Ventral fin near the pectoral, with a spine and four or five soft rays, or reduced to a single filamentous ray. Præcaudal vertebræ with transverse processes, at the back of which the ribs are inserted. Air-bladder simple or bifid and prolonged into the caudal region.

South-eastern Asia. One genus in Africa.

1. MICRACANTHUS.

Sauv. Bull. Soc. Philom. (7) iii. 1878, p. 95, and N. Arch. Mus. (2) iii. 1880, p. 37.

Body rounded, elongate, covered with moderately large strongly ctenoid scales; no lateral line. Mouth rather small, with small teeth. Bones of head not serrated; no opercular spines. Dorsal fin short, with 3 spines; anal long, with 4 spines. Ventral fins a little behind vertical of base of pectoral, with a feeble spine and 5 soft rays.

Ogowe.

1. MICRACANTHUS MARCHII.

Sauv. tt. cc. pp. 96, 38, pl. iii. fig. 4.

Depth of body equal to length of head, $3\frac{1}{2}$ times in total length. Snout hardly as long as eye, which is 4 times in length of head; 3 series of scales on the cheek. Dorsal III 7; spines very short, longest soft rays about as long as head. Anal IV 23; rays increasing in length posteriorly. Pectoral a little shorter than head. Outer soft ray of ventral produced. Caudal rounded. Caudal peduncle much deeper than long. Scales in 35 longitudinal and 9 transverse series. Uniform brown.

Total length 45 millim.

Ogowe.—Type, in Paris Museum, examined.

The type of this family, *Osphromenus olfax*, Cuv., has been acclimatised in Mauritius. It is remarkable for its large size (up to 500 millim.), its deep compressed body, the much produced, filamentous outer soft ray of the ventral, and the presence of 11 to 13 dorsal and 9 to 12 anal spines.

Fam. 13. ANABANTIDÆ.

A superbranchial respiratory organ, situated in a cavity above the gills. Mouth protractile, the maxillaries excluded from the oral border; palate toothed. Suborbitals with internal laminæ, supporting the eye; lower pharyngeal bones large, united, with persistent suture; gill-membranes grown to isthmus; 4 branchiostegal rays; two nostrils on each side. Dorsal and anal fins long, with numerous spines. Ventral

fin near the pectoral, with one spine and five soft rays; pelvic bones connected with the clavicular symphysis by ligament. Præcaudal vertebræ all with transverse processes, to the extremity of which the ribs are attached. Air-bladder much elongate, bifid behind, and prolonged into the caudal region, which bears ribs.

A single genus.

1. ANABAS.

Cuv. Règne Anim. ii. p. 339 (1817); Günth. Cat. Fish. iii. p. 374 (1861); Bouleng. Poiss. Bass. Congo, p. 371 (1901), and Fish. Nile, p. 441 (1907).

Spirobranchus, Cuv. & Val. Hist. Poiss. vii. p. 392 (1831); Günth. t. c. p. 373.

Ctenopoma, Peters, Mon. Berl. Ac. 1844, p. 34; Günth. t. c. p. 373; Peters, Reise Mossamb. iv. p. 14 (1868).

Sandelia, Casteln. Mém. Poiss. Afr. Austr. p. 36 (1861).

Body short or moderately elongate, more or less compressed, covered with large, hard, ctenoid scales; lateral line interrupted. Head convex, covered with scales; mouth moderately large, with small conical teeth; teeth on the vomer and on the parasphenoid; palatine teeth present or absent. Anterior nostril in a short tube. Spinous part of the dorsal and anal fins longer than the soft; 12 to 20 dorsal and 6 to 11 anal spines. Vertebræ 25 to 31.

South-eastern Asia and Tropical and South Africa.

Synopsis of the Species.

I. Caudal peduncle * very distinct, measuring at least the diameter of the eye; depth of body more than $2\frac{1}{2}$ times in total length.

A. Ventral fin not reaching anal; maxillary extending to below anterior third of eye, or beyond; teeth on palatine bones.

1. 12 to 17 dorsal spines; suboperculum not denticulate; scales partly cycloid, partly ctenoid.

D. XII–XIV 8–10; A. VI–VII 8–11; Sc. 27–30 $\frac{3-4}{9-10}$ . . . . . 1. *A. capensis*, C. & V., p. 50.

D. XIII–XV 8–9; A. VIII–IX 8–9; Sc. 27–29 $\frac{3-4}{10-11}$ . . . . . 2. *A. vicinus*, Blgr., p. 51.

D. XV–XVII 9–10; A. VII–VIII 9–10; Sc. 33–35 $\frac{6-7}{13-16}$ . . . . . 3. *A. bainsii*, Casteln., p. 52.

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* The muscular part, not including the base of the caudal fin, which is covered with scales.

2. 17 to 20 dorsal spines; suboperculum denticulate; scales all ctenoid.

D. XVII–XVIII 8–9; A. VIII–X 8–9; Sc. 31–35 $\frac{2-2\frac{1}{2}}{8-9}$ . . . . . 4. *A. multispinis*, Peters, p. 53.

D. XVIII–XIX 10–11; A. VII 10; Sc. 33–34 $\frac{2\frac{1}{2}}{9}$. . . . . 5. *A. pellegrini*, Blgr., p. 54.

D. XIX–XX 9–10; A. IX–XI 9–10; Sc. 30–33 $\frac{2\frac{1}{2}}{9}$. . . . . 6. *A. nigropannosus*, Reichen., [p. 55.

B. Ventral fin extending to or beyond origin of anal in adult; maxillary not extending beyond anterior third of eye; no teeth on palatine bones.

D. XVI–XVII 8–9; A. IX–XI 9–11; Sc. 26–28 $\frac{3}{8}$; eye 3 to $3\frac{2}{3}$ times in length of head. 7. *A. congicus*, Blgr., p. 57

D. XV–XVII 7–10; A. VII–IX 9–11; Sc. 25–30 $\frac{2\frac{1}{2}-3}{9-10}$; eye 4 to $4\frac{1}{2}$ times in length of head . . . . . 8. *A. nanus*, Gthr., p. 58.

II. Caudal peduncle absent or much reduced, shorter than the diameter of the eye.

A. Caudal peduncle very short, or barely definable.

1. Præorbital not serrated.

a. Ventral extending much beyond origin of anal.

D. XVII–XVIII 7; A. X–XI 7; maxillary extending to below anterior fourth of eye. 9. *A. ansorgii*, Blgr., p. 59.

D. XVI 8–9; A. X 9–11; maxillary extending hardly to below anterior border of eye. . 10. *A. fasciolatus*, Blgr., p. 60.

b. Ventral not extending much beyond origin of anal; maxillary extending to below anterior fourth or third of eye.

D. XVII–XIX 8–10; A. X 10–11; depth of body $2\frac{1}{4}$ to $2\frac{1}{2}$ times in ~~total~~ length; suboperculum and interoperculum finely serrated . . . . . 11. *A. petherici*, Gthr., p. 61.

D. XVI–XVIII 8–10; A. IX (rarely X) 9–11; depth of body 2 to $2\frac{2}{3}$ times in ~~total~~ length; suboperculum and interoperculum more or less distinctly serrated . . . . 12. *A. kingsleyæ*, Gthr., p. 62.

D. XIV–XVI 8–10; A. IX–XI 8–11; depth of body $2\frac{3}{4}$ to 3 times in total length; interoperculum often entire . . . . . 13. *A. muriei*, Blgr., p. 64.

D. XIV–XVI 8–11; A. VII–IX 8–11; depth of body 2 to $2\frac{1}{2}$ times in total length; suboperculum and interoperculum entire or feebly serrated . . . . . 14. *A. maculatus*, Thomin., p. 65.

2. Præorbital serrated; snout pointed; no palatine teeth.

D. XV 10; A. VIII 11 . . . . . 15. *A. oxyrhynchus*, Blgr., p. 66.

B. Caudal peduncle absent, dorsal and anal close to the caudal fin and forming a nearly continuous outline; snout pointed.

D. XVI–XVIII 9–12; A. IX–X 10–12 . . 16. *A. ocellatus*, Pellegr., p. 67.

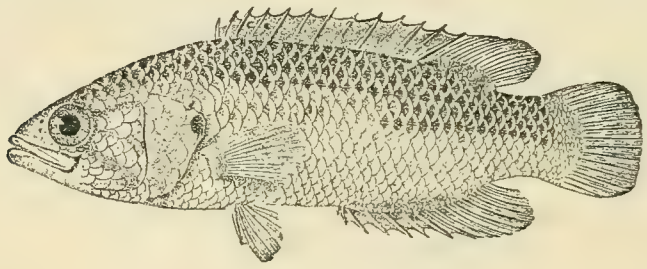
1. ANABAS CAPENSIS.

Spirobranchus capensis, Cuv. & Val. Hist. Poiss. vii. p. 392, pl. cc. (1831); Val. in Cuv. Règne Anim. Illustr., Poiss. pl. lxxv. fig. 1 (1836); Casteln. Mém. Poiss. Afr. Austr. p. 36 (1861); Günth. Cat. Fish. iii. p. 373 (1861) *.

Anabas capensis, Bouleng. Ann. & Mag. N. H. (7) xvi. 1905, p. 53.

Depth of body 3 to $3\frac{1}{4}$ times in total length, length of head $2\frac{2}{3}$ to 3 times. Snout rounded, as long as eye, which is 4 to 5 times in length of head and 1 to $1\frac{1}{2}$ times in interorbital width; maxillary extending to

Fig. 27.



Anabas capensis.
Type, after Cuvier & Valenciennes.

below anterior third or centre of eye; palatine teeth present; none of the bones of the head serrated; operculum with a notch, between two more or less obtuse spines. 8 or 9 short gill-rakers on lower part of anterior arch. Dorsal XII–XIV 8–10; spines increasing in length to the ninth or tenth, which measures about $\frac{1}{4}$ length of head; longest soft rays about $\frac{1}{2}$ length of head. Anal VI–VII 8–11, similar to dorsal. Pectoral $\frac{1}{2}$ to $\frac{2}{3}$ length of head. Ventral not reaching anal. Caudal rounded. Caudal peduncle about $1\frac{1}{2}$ times as long as deep, the distance between dorsal and caudal $\frac{1}{4}$ to $\frac{1}{3}$ length of head. Scales rugose, partly cycloid, partly ctenoid, 27–30 $\frac{3-4}{9-10}$; lateral lines $\frac{14-18}{6-12}$. Olive-brown above, yellowish beneath, back sometimes spotted with blackish; three

* The diagnosis given by Günther does not apply to the first of the three specimens enumerated by him, which belongs to the species here described as *A. vicinus*.

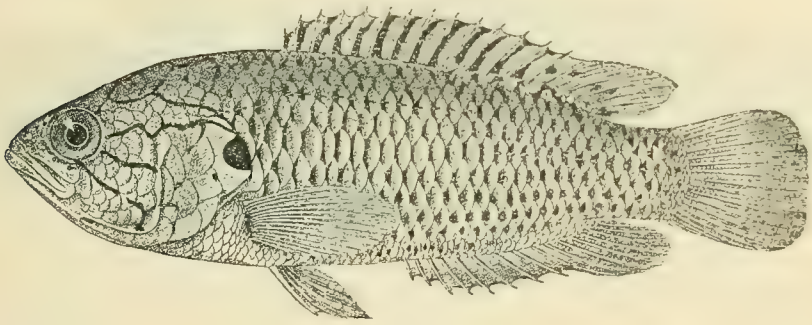
more or less distinct dark streaks radiating from the eye towards the gill-cover; membrane in the opercular notch black.

Total length 140 millim.

South-western parts of Cape Colony.—Types in Paris Museum.

1–3. Ad.	Vygo Kraal, near Cape Town.	Lord Derby (P.).
4. Ad.	Cape Flats.	S. African Museum (P.).
5–7. Hgr. & yg.	Near Cape Town.	H.M.S. 'Challenger.'
8–9. Hgr. & yg.	Eerste R., Stellenbosch.	S. African Museum (P.).
10. Ad.	Princess Vlei, Cape Division.	,,
11–20. Ad.	Paarl R., Cape Division.	G. E. Dobson, Esq. (P.).
21. Skel.	,, ,,	,,
22. Ad.	Woodville, near Georgetown.	Dr. J. D. F. Gilchrist (P.).
23–24. Ad. & hgr.	Berg R., Wellington.	Col. Sloggett (P.).
25. Ad., stffd.	Cape of Good Hope.	Sir A. Smith (P.).

Fig. 28.



Anabas vicinus.
Type.

2. ANABAS VICINUS, sp. n.

Depth of body $2\frac{2}{3}$ to 3 times in total length, length of head $2\frac{3}{4}$ to 3 times. Snout rounded, as long as or a little shorter than eye, which is 4 to 5 times in length of head and 1 to $1\frac{1}{2}$ times in interorbital width; maxillary extending to below anterior third or centre of eye; palatine teeth present; none of the bones of the head serrated; operculum with a notch, between two more or less obtuse spines. 9 to 11 short gill-rakers on lower part of anterior arch. Dorsal XIII–XV 8–9; spines increasing in length to the eighth or ninth, which measures about $\frac{1}{4}$ length of head; longest soft rays $\frac{2}{5}$ to $\frac{1}{2}$ length of head. Anal VIII–IX 8–9, similar to dorsal. Pectoral $\frac{3}{5}$ to $\frac{2}{3}$ length of head. Ventral not reaching anal. Caudal rounded. Caudal peduncle $1\frac{2}{3}$ to 2 times

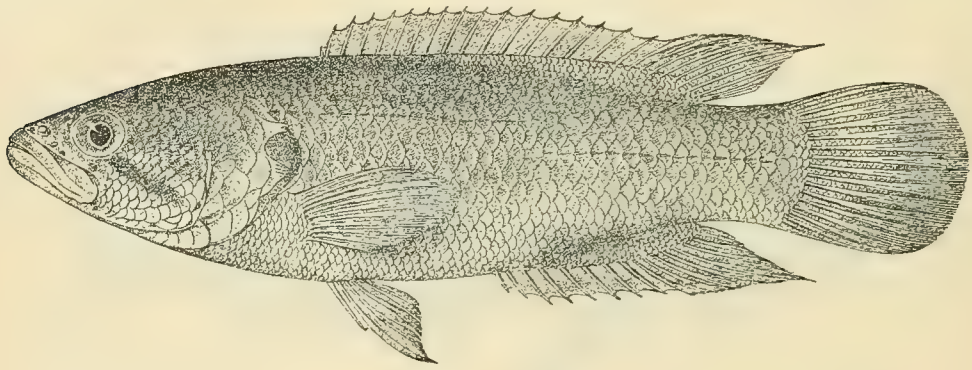
as deep as long, the distance between dorsal and caudal about $\frac{1}{4}$ length of head. Scales rugose, partly cycloid, partly ctenoid, 27–29 $\frac{3-4}{10-11}$; lateral lines $\frac{15-18}{4-11}$. Brown above, lighter beneath, often spotted all over with black; blackish lines radiating from the eye; spinous dorsal with black markings; lobe between opercular spines black.

Total length 120 millim.

Port Elizabeth, Cape Colony.

1–3. Types,	Port Elizabeth.	H. A. Spencer, Esq. (P.).
4–6. Types.	,,	O. West, Esq. (P.).
7–10. Types.	,,	
11. Skel.	,,	
12. Hgr.	—— ?	

Fig. 29.



Anabas bainsii.
Buffalo R. $\frac{2}{3}$.

3. ANABAS BAINSII.

Sandelia bainsii, Casteln. Mém. Poiss. Afr. Austr. p. 37 (1861); Bouleng. Ann. & Mag. N. H. (7) iii. 1899, p. 243.
Ctenopoma microlepidotum, Günth. Cat. Fish. iii. p. 565 (1861).
Spirobranchus bainsii, Günth. Ann. & Mag. N. H. (4) xviii. 1876, p. 67.
Anabas bainsii, Bouleng. Ann. & Mag. N. H. (7) xvi. 1905, p. 53.

Depth of body 3 to $3\frac{1}{2}$ times in total length, length of head $2\frac{3}{4}$ to 3 times. Snout rounded, as long as or slightly longer than eye, which is 4 to $5\frac{1}{3}$ times in length of head and 1 to $1\frac{1}{2}$ times in interorbital width; maxillary extending to below centre of eye; palatine teeth present; præorbital, præoperculum, suboperculum, and interoperculum not denticulate; operculum with a deep notch, between two spines or groups of spines. 10 or 11 short gill-rakers on lower part of anterior

arch. Dorsal XV–XVII 9–10; spines increasing in length to the ninth or tenth, which measures about $\frac{1}{4}$ length of head; longest soft rays $\frac{3}{5}$ to $\frac{2}{3}$ length of head. Anal VII–VIII 9–10, similar to dorsal. Pectoral $\frac{3}{5}$ to $\frac{2}{3}$ length of head. Ventral not reaching anal. Caudal rounded, some of the rays sometimes somewhat produced. Caudal peduncle $1\frac{1}{3}$ to $1\frac{1}{2}$ times as deep as long, the distance between dorsal and caudal about $\frac{1}{3}$ length of head. Scales rugose, partly cycloid, partly ctenoid, 33–35 $\frac{6-7}{13-16}$; lateral lines $\frac{16-17}{14-15}$. Olive-brown or dark green above, yellowish beneath; a more or less distinct dark oblique streak from below the eye to the angle of the præoperculum.

Total length 180 millim.

Eastern parts of Cape Colony.—Type lost.

1. Type of *Ctenopoma microlepidotum.*	Cape of Good Hope.	Army Medical College (P.).
2–6. Ad. & hgr.	Buffalo R., Port Elizabeth.	Major H. Trevelyan (P.).
7. Skel.	,, ,,	,,

4. ANABAS MULTISPINIS.

Ctenopoma multispinis, Peters, Mon. Berl. Ac. 1844, p. 34, Müller's Arch. f. Anat. u. Phys. 1846, p. 481, pl. x. figs. 10–15, and Reise Mossamb. iv. p. 16, pl. ii. fig. 3 (1868).

? *Anabas scandens* (non Daldorff), Bianconi, Spec. Zool. Mosamb. p. 270 (1858).

Spirobranchus smithii, Bianc. op. cit. p. 279, pl. x. (1859).

Ctenopoma multispine, Günth. Cat. Fish. iii. p. 373 (1861).

Anabas multispinis, Bouleng. Ann. & Mag. N. H. (7) xvi. 1905, pp. 53 & 646, and Tr. Zool. Soc. xviii. 1911, p. 408.

Depth of body $3\frac{1}{2}$ to 4 times in total length, length of head $3\frac{1}{2}$ to $3\frac{2}{3}$ times. Snout rounded, as long as or a little shorter than eye, which is 4 to 5 times in length of head and 1 to $1\frac{1}{2}$ times in interorbital width; maxillary extending to below centre or posterior third of eye; palatine teeth present; præorbital and præoperculum entire; interoperculum also entire, or posterior part serrated; suboperculum and operculum more or less strongly serrated or spinose; operculum more or less strongly notched. 6 or 7 short gill-rakers on lower part of anterior arch. Dorsal XVII–XVIII 8–9; spines equal from the fourth or fifth, about $\frac{1}{4}$ length of head; longest soft rays $\frac{1}{2}$ to $\frac{3}{5}$ length of head. Anal VIII–X 8–9, similar to dorsal. Pectoral $\frac{3}{5}$ to $\frac{2}{3}$ length of head. Ventral not reaching anal. Caudal rounded. Caudal peduncle about

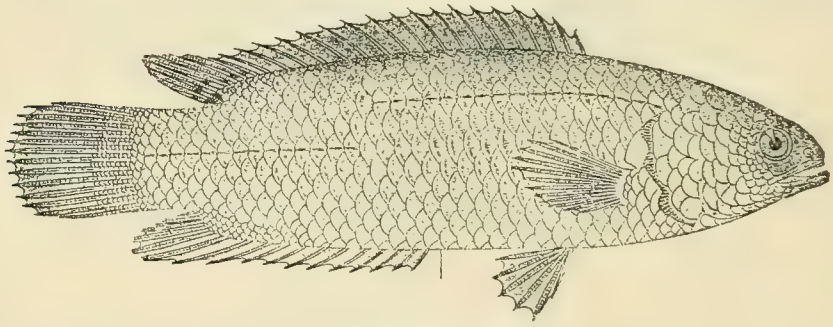
$1\frac{1}{2}$ times as deep as long, the distance between dorsal and caudal about $\frac{1}{3}$ length of head. Scales rugose and strongly ctenoid, 31–35 $\frac{2-2\frac{1}{2}}{8-9}$; lateral lines $\frac{15-18}{11-14}$. Olive or green above, with or without black spots or with rather indistinct dark vertical bars, whitish beneath; soft dorsal spotted with blackish.

Total length 140 millim.

Bechuanaland, Zambesi Basin, Lakes Bangwelu and Mweru, Uelle.—Types in Berlin Museum.

1. One of the types.	Quellimane, Mozambique.	Prof. W. Peters (P.).
2–4. Ad. & hgr.	Umsitu R. at Broken Hill, N.W. Rhodesia.	Rev. F. A. Rogers and E. C. Chubb, Esq. (P.).
5. Skel.	,, ,,	,, ,,
6. Yg.	Kazungula, Upp. Zambesi.	Rev. L. Jalla (C.).
7, 8–10. Ad. & hgr.	L. Bangwelu.	F. H. Melland, Esq. (P.).
11. Ad.	Lukonzolwa, L. Mweru.	Dr. L. Stappers (C.).
12–14. Ad.*	Okovango R., L. Ngami.	R. B. Woosnam, Esq. (C.).
15. Skel.	,, ,,	,,

Fig. 30.



Anabas multispinis.
Type, after Peters (Reise Mossamb.).

5. ANABAS PELLEGRINI.

Bouleng. Ann. Mus. Congo, Zool. ii. p. 51, pl. xv. fig. 1 (1902).

Depth of body equal to or a little greater than length of head, $3\frac{1}{3}$ to $3\frac{1}{2}$ times in total length. Snout rounded, a little shorter than eye, which is 4 times in length of head and $1\frac{1}{3}$ times in interorbital

* In one of the specimens (♀) large round yellow eggs, about 2 millim. in diameter, are closely packed, 7 or 8 on each side, in a cavity behind the gills, entirely covered by the operculum.

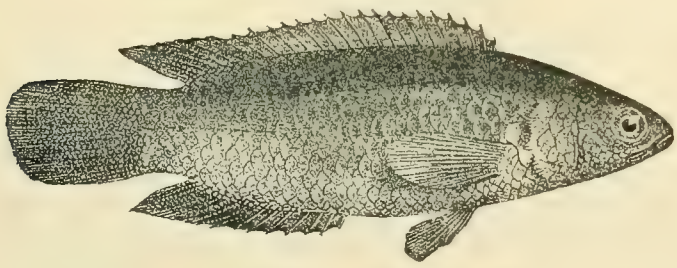
width; maxillary extending to below centre of eye; palatine teeth present; præorbital and præoperculum entire; strong spines on interoperculum, suboperculum, and operculum; latter with a deep notch, and another between it and the suboperculum. 6 very short gill-rakers on lower part of anterior arch. Dorsal XVIII–XIX 10–11; spines equal from the sixth, rather more than $\frac{1}{4}$ length of head; longest soft rays $\frac{1}{2}$ length of head. Anal VII 10, similar to dorsal. Pectoral nearly $\frac{3}{4}$ length of head. Ventral not reaching anal. Caudal rounded. Caudal peduncle nearly twice as deep as long, the distance between dorsal and caudal a little greater than diameter of eye. Scales rugose and strongly ctenoid, 33–34 $\frac{21}{9}$; lateral lines $\frac{16-18}{14-15}$. Olive, very dark above; more or less indistinct dark bars on posterior part of body.

Total length 105 millim.

Ubanghi.—Type in Congo Museum, Tervueren.

1. One of the types. Yembe R. at Banzyville. Capt. Royaux (C.).

Fig. 31.



Anabas pellegrini.
Type (A. M. C.). $\frac{5}{6}$.

6. ANABAS NIGROPANNOSUS.

Ctenopoma nigropannosum, Reichen. Sitzb. Ges. Nat. Fr. Berl. 1875, p. 147.

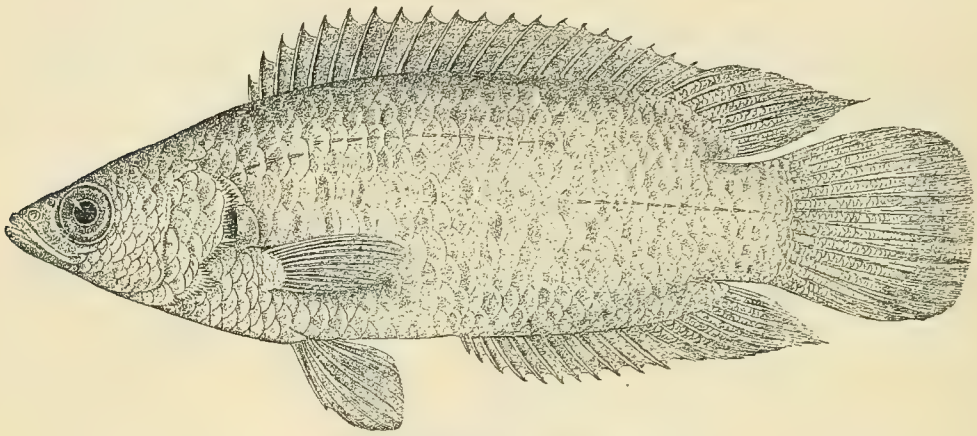
Ctenopoma gabonense, Günth. Ann. & Mag. N. H. (6) xvii. 1896, p. 269, pl. xiii. fig. C; Pellegr. Bull. Mus. Paris, 1899, p. 358.

Anabas nigropannosus, Bouleng. Ann. & Mag. N. H. (7) iii. 1899, p. 242, and Poiss. Bass. Congo, p. 373 (1901); Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 49.

Depth of body 3 to $3\frac{1}{2}$ times in total length, length of head 3 to $3\frac{1}{3}$ times. Snout rounded, hardly as long as eye, which is 4 to 5 times in length of head and $1\frac{1}{3}$ to $1\frac{2}{3}$ times in interorbital width; maxillary

extending to below centre of eye; palatine teeth present; præorbital entire or feebly denticulate behind; angle of præoperculum feebly serrated in adult; strong spines on interoperculum, suboperculum, and operculum; latter with a deep notch, and another between it and the suboperculum. 6 or 7 very short gill-rakers on lower part of anterior arch. Dorsal XIX–XX 9–10; spines subequal from the fourth or fifth,

Fig. 32.



Anabas nigropannosus.
Type of *Ctenopoma gabonense*.

about $\frac{1}{3}$ length of head; longest soft rays $\frac{3}{5}$ to $\frac{3}{4}$ length of head. Anal IX–XI 9–10, spines and soft rays a little shorter than in dorsal. Pectoral $\frac{2}{3}$ to $\frac{3}{4}$ length of head. Ventral not reaching anal. Caudal rounded. Caudal peduncle twice as deep as long, the distance between dorsal and caudal at least as great as diameter of eye. Scales rugose and strongly ctenoid, 30–33 $\frac{2\frac{1}{2}}{9}$; lateral lines $\frac{15-17}{12-16}$. Olive-brown above, whitish beneath; membrane in opercular notch black.

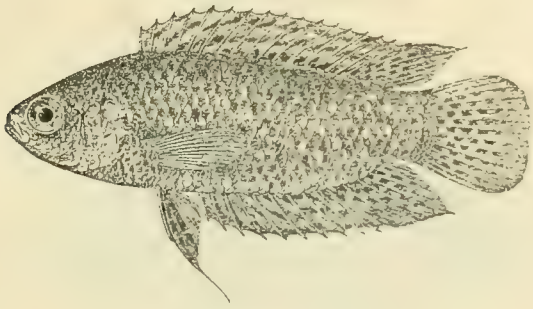
Total length 170 millim.

Gaboon and Congo.—Types in Berlin Museum.

1. Type of *Ct. gabonense*.	Gaboon.	R. B. N. Walker, Esq. (P.).
2. „	„	
3. Skel.	„	
4. Ad.	Lambarene, Ogowe.	Dr. W. J. Ansorge (C.).
5. Ad.	Kaika N'Zobe, Chiloango.	Major Cabra (C.).
6. Ad.	Chiloango Town.	Dr. W. J. Ansorge (C.).
7. Ad.	Luali R. (Chiloango) at Lundo.	„

8. Ad.	Lebuzi R. (Chiloango) at Kuka Muno.	Dr. W. J. Ansorge (C.).
9–10. Ad. & hgr.	Banana, Lower Congo.	Capt. Wilverth (C.).
11. Ad.	Manyanga, „	„
12–14, 15. Ad. & hgr.	Monsembe, Upper Congo.	Rev. J. H. Weeks (P.).
16. Ad.	Upper Congo.	Brussels University.

Fig. 33.



Anabas congicus.
Type.

7. ANABAS CONGICUS.

Ctenopoma congicum, Bouleng. Ann. & Mag. N. H. (5) xix. 1887, p. 148.
Anabas congicus, Bouleng. Ann. & Mag. N. H. (7) iii. 1899, p. 242, Poiss. Bass. Congo, p. 374 (1901), and Ann. Mus. Congo, Zool. ii. pp. 22 & 51 (1902).

Depth of body $2\frac{2}{5}$ to 3 times in total length, length of head 3 to $3\frac{1}{3}$ times. Snout rounded, shorter than eye, which is 3 (young) to $3\frac{2}{3}$ times in length of head and nearly equals interorbital width; maxillary extending to below anterior border or anterior fourth of eye; no palatine teeth; præorbital, præoperculum, and interoperculum entire; subopercular more or less strongly denticulate; 4 or 5 spines above and one below opercular notch. 7 or 8 very short gill-rakers on lower part of anterior arch. Dorsal XVI–XVII 8–9; last spine longest, $\frac{2}{5}$ to $\frac{1}{2}$ length of head; longest soft rays $\frac{3}{4}$ to $\frac{4}{5}$ length of head in females and young, produced and longer than head in males. Anal IX–XI 9–11, similar to dorsal. Pectoral nearly as long as head. Ventral produced into a filament, reaching far beyond origin of anal. Caudal rounded. Caudal peduncle nearly twice as deep as long, as long as eye. Scales rugose, strongly ctenoid, 26–28 $\frac{3}{8}$; lateral lines $\frac{13-16}{7-11}$. Yellowish

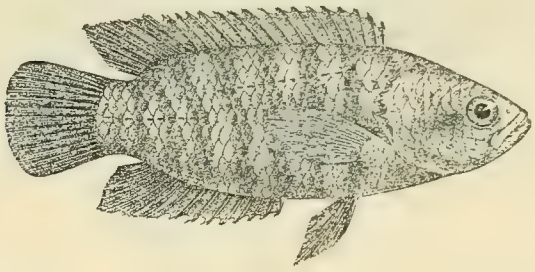
to dark brown, spotted with blackish, with light spots on the lower half of the body and on the vertical fins, the dark and light spots sometimes forming wavy vertical bars.

Total length 85 millim.

Ogowe, Chiloango, Lower Congo, and Ubanghi.

1. Type.	Lagoons on islands in Lower Congo.	M. F. Hens (C.).
2–8. Ad., hgr., & yg.	Luali R. (Chiloango) at Lundo.	Dr. W. J. Ansorge (C.).
9. Hgr.	Lambarene, Ogowe.	,,

Fig. 34.



Anabas nanus.
Type, after Günther (*l. c.*).

8. ANABAS NANUS.

Ctenopoma nanum, Günth. Ann. & Mag. N. H. (6) xvii. 1896, p. 269, pl. xiii. fig. B.

Anabas maculatus (non Thomin.), Bouleng. Ann. Mus. Congo, Zool. ii. p. 51 (1882); Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 50.

Depth of body equal to length of head, $2\frac{2}{3}$ to 3 times in total length. Snout rounded, as long as or a little shorter than eye, which is 4 to $4\frac{1}{2}$ times in length of head and nearly equals interorbital width; maxillary extending to below anterior fourth of eye; no palatine teeth; præorbital, præoperculum, and interoperculum entire; suboperculum entire or more or less strongly denticulate; 2 to 5 spines above and one or two below opercular notch. 5 or 6 very short gill-rakers on lower part of anterior arch. Dorsal XV–XVII 7–10; last spine longest, about $\frac{1}{3}$ length of head; longest soft rays $\frac{1}{2}$ to $\frac{2}{3}$ length of head. Anal VII–IX 9–11, similar to dorsal. Pectoral $\frac{2}{3}$ to $\frac{3}{4}$ length of head. Ventral, in adult, produced into a filament, reaching beyond origin of anal. Caudal rounded. Caudal peduncle 2 to $2\frac{1}{2}$ times as deep as

long, as long as eye. Scales rugose, strongly ctenoid, 25–30 $\frac{21-3}{9-10}$; lateral lines $\frac{11-18}{4-10}$. Brownish or olive, with 6 to 9 more or less distinct dark cross-bands; young with a round blackish spot at base of caudal.

Total length 75 millim.

South Cameroon to Congo.

1–6. Ad. & hgr.	Kribi R., S. Cameroon.	G. L. Bates, Esq. (C.).
7–11. Ad. & hgr.	Zima Country, „	„
12–16. Ad. & hgr.	Nyong R., „	„
17–19. Ad. & yg.	„ at Akonolinga, S. Cameroon.	„
20–24. Ad.	Ja R., S. Cameroon.	„
25–26. Types.	Gaboon.	
27. Ad.	Lambarene, Ogowe.	Dr. W. J. Ansorge (C.).
28. Ad.	Lindi R., Upper Congo.	M. M. Storms (C.); Brussels Museum (P.).
29–30. Ad.	Avakubi, Aruwimi.	Dr. C. Christy (C.).
31–32. Ad. & hgr.	Banzyville, Ubanghi.	Capt. Royaux (C.).
33. Ad.	Dungu, Uellé.	Capt. Hutereau (C.).
34. Ad.	Between Arebi and Aba, Uellé.	„

Fig. 35.

Anabas ansorgii.
Type (A. M. C.).

9. ANABAS ANSORGII.

Bouleng. Ann. Mus. Congo, Zool. ii. p. 23, pl. xvii. fig. 7 (1912).

Depth of body equal to length of head, $3\frac{1}{4}$ to $3\frac{1}{3}$ times in total length. Snout rounded, a little shorter than eye, which is $3\frac{2}{3}$ to 4 times in length of head and equals or a little exceeds interorbital width; maxillary extending to below anterior fourth of eye; no palatine teeth; præorbital, præoperculum, interoperculum, and suboperculum entire; 2 to 5 small spines above and one below opercular notch. 7 or 8 very short gill-rakers on lower part of anterior arch. Dorsal XVII–XVIII 7; last spine longest, $\frac{1}{2}$ length of head; median soft ray produced into

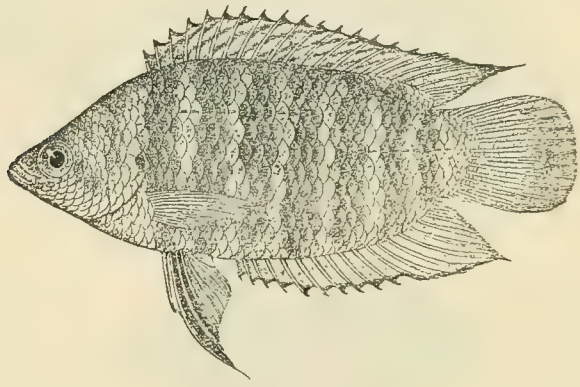
a filament. Anal X–XI 7, similar to dorsal. Pectoral $\frac{3}{4}$ length of head. Ventral produced into a filament, reaching beyond origin of anal. Caudal rounded. Caudal peduncle extremely short, shorter than eye. Scales rugose, strongly ctenoid, 28–30 $\frac{2\frac{1}{2}-3}{8}$; lateral lines $\frac{2-8}{0-5}$. Brownish, with 6 or 7 regular dark brown or blackish vertical bars, narrower than the interspaces; fins greyish brown, dorsal and anal with black bars, the continuation of those on the body, and with the rays terminating in white filaments; the bars indistinct in some specimens.

Total length 63 millim.

Chiloango.

1–8. Types. Luali R. at Lundo. Dr. W. J. Ansorge (C.).

Fig. 36.



Anabas fasciolatus.
Type.

10. ANABAS FASCIOLATUS.

Bouleng. Ann. & Mag. N. H. (7) iii. 1899, p. 242, and Poiss. Bass. Congo, p. 375 (1901); Arnold, Wochenschr. Aq.-Terr. 1913, pp. 681, 723, figs.

Depth of body $2\frac{1}{4}$ to $2\frac{1}{3}$ times in total length, length of head $3\frac{1}{4}$ to $3\frac{1}{3}$ times. Snout rounded, a little shorter than eye, which is 4 times in length of head and a little exceeds interorbital width; maxillary hardly extending to below anterior border of eye; no palatine teeth; præorbital, præoperculum, and interoperculum entire; suboperculum entire or indistinctly denticulate; 3 or 4 small spines above and 1 or 2 below opercular notch. 8 or 9 very short gill-rakers on lower part of anterior arch. Dorsal XVI 8–9; last spine longest, $\frac{1}{2}$ length of head; median soft ray produced into a filament. Anal X 9–11, similar to dorsal.

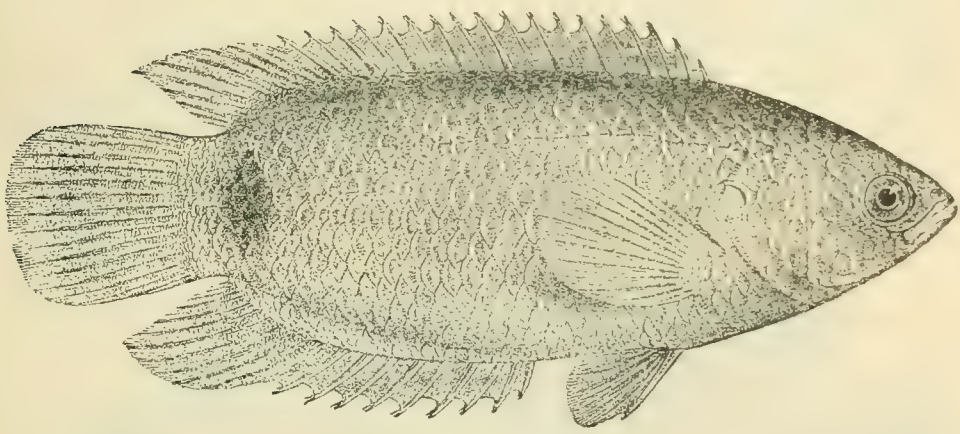
Pectoral as long as head. Ventral produced into a filament, reaching fifth or sixth anal spine. Caudal rounded. Caudal peduncle merely indicated. Scales rugose and strongly ctenoid, 27–28 $\frac{3}{9}$; lateral lines $\frac{14-15}{9-11}$. Brownish, with 6 or 7 regular dark bars with wavy edges, wider than the interspaces; spinous dorsal and anal edged with blackish, the former with several oblique dark streaks; outer half of ventrals black.

Total length 79 millim.

Congo.

1–3. Types.	Monsembe, Upper Congo.	Rev. J. H. Weeks (P.).
4. Ad.	Boma, Lower Congo.	Mr. J. Paul Arnold (P.).

Fig. 37.



Anabas petherici.
Type (F. N.). $\frac{4}{5}$.

11. ANABAS PETHERICI.

Ctenopoma petherici, part., Günth. Ann. & Mag. N. H. (3) xiii. 1864, p. 211, xx. 1867, p. 110, and Petherick's Trav. ii. p. 208, pl. i. fig. A (1869).

Anabas petherici, Bouleng. Ann. & Mag. N. H. (7) iii. 1899, p. 243, and Fish. Nile, p. 442, pl. lxxxiii. fig. 1 (1907); Pellegr. Poiss. Bass. Tchad, p. 120, fig. (1914).

Depth of body $2\frac{1}{4}$ to $2\frac{1}{2}$ times in total length, length of head $2\frac{2}{3}$ to 3 times. Snout rounded, as long as or a little shorter than eye, which is 4 to $4\frac{2}{3}$ times in length of head and about $1\frac{1}{2}$ times in interorbital width; maxillary extending to below anterior third of eye; palatine teeth present; præorbital entire; a few small serræ may be present at the angle of the præoperculum; interoperculum and suboperculum finely serrated; operculum with two groups of strong serræ,

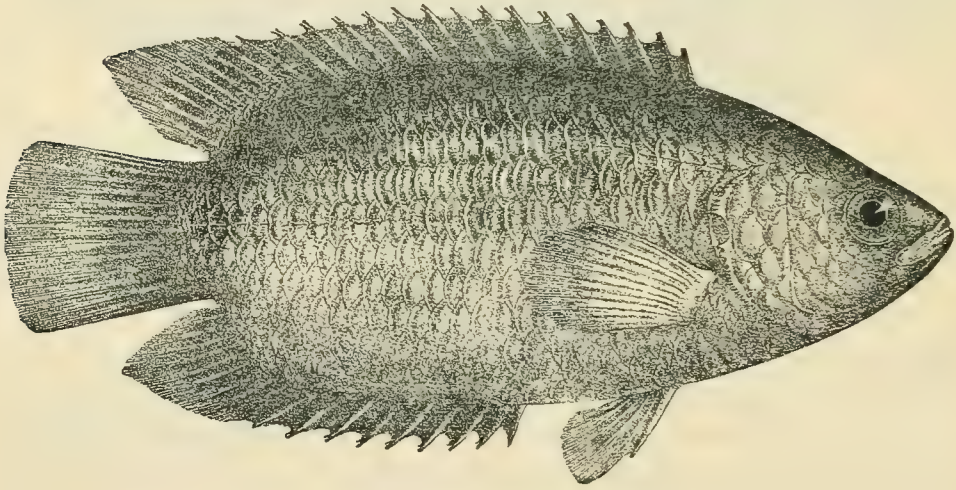
with a deep notch between them. 6 or 7 very short gill-rakers on lower part of anterior arch. Dorsal XVII–XIX 8–10; spines increasing in length to the last, which measures $\frac{2}{5}$ to $\frac{1}{2}$ length of head; longest soft rays $\frac{1}{2}$ to $\frac{2}{3}$ length of head. Anal X 10–11, similar to dorsal. Pectoral about $\frac{2}{3}$ length of head. Ventral extending to origin of anal. Caudal rounded. A mere indication of a caudal peduncle. Scales rugose and strongly ctenoid, 28–30 $\frac{3}{9-10}$; lateral lines $\frac{14-17}{10-12}$. Olive or dark green above, whitish beneath; a large black spot in front of the base of the caudal.

Total length 160 millim.

White Nile, Bahr el Gebel, Lake Chad.

1–3. Ad.	Gharb-el-Aish, White Nile.	L. Loat, Esq. (C.).
4–15. Ad. & hgr.	Fashoda, „	„
16. Skel.	„ „	„
17. Type.	Gondokoro, Bahr-el-Gebel.	J. Petherick, Esq. (C.).
18. Ad.	Shari R.	Capt. G. B. Gosling (P.).

Fig. 38.



Anabas kingsleyæ.
Type, after Günther (Ann. & Mag. N. H. 1896). $\frac{5}{6}$.

12. ANABAS KINGSLEYÆ.

Ctenopoma petherici, part., Günth. Ann. & Mag. N. H. (3) xx. 1867, p. 110, and (6) xvii. 1896, p. 270.

Ctenopoma petherici (non Günth.), Steind. Sitzb. Ak. Wien, lxi. i. 1870, p. 974, and Notes Leyd. Mus. xvi. 1894, p. 37.

Ctenopoma kingsleyæ, Günth. Ann. & Mag. N. H. (6) xvii. 1896, p. 270, pl. xiii. fig. A; Pellegr. Bull. Mus. Paris, 1899, p. 359.

Anabas kingsleyæ, Bouleng. Ann. & Mag. N. H. (7) iii. 1899, p. 243, and Poiss. Bass. Congo, p. 375 (1901).

Depth of body 2 to $2\frac{2}{3}$ times in total length, length of head $2\frac{3}{5}$ to $3\frac{2}{5}$ times. Snout rounded, a little shorter than eye, which is $3\frac{1}{2}$ to $4\frac{1}{2}$ times in length of head and 1 to $1\frac{1}{2}$ times in interorbital width; maxillary extending to below anterior fourth or third of eye; palatine teeth present; præorbital and præoperculum entire; suboperculum and interoperculum more or less distinctly denticulate; several spines above and below opercular notch. 6 to 8 very short gill-rakers on lower part of anterior arch. Dorsal XVI–XVIII 8–10; spines subequal from the fourth or fifth, $\frac{1}{3}$ to $\frac{2}{5}$ length of head; longest soft rays $\frac{1}{2}$ to $\frac{2}{3}$ length of head. Anal IX (rarely X) 9–11, similar to dorsal. Pectoral $\frac{2}{3}$ to $\frac{4}{5}$ length of head. Ventral not extending beyond origin of anal. Caudal rounded. A mere indication of a caudal peduncle. Scales rugose and strongly ctenoid, 25–29 $\frac{2\frac{1}{2}-3}{8-10}$; lateral lines $\frac{15-16}{8\ 14}$. Brown or olive; a large black spot in front of the base of caudal, surrounded by a yellow circle in the young.

Total length 190 millim.

Senegambia to Congo.

1–2. Ad.	Gambia.	J. S. Budgett, Esq. (P.).
3. Ad.	Corbal R. at Tchitote, Portuguese Guinea.	Dr. W. J. Ansorge (C.).
4. Yg.	N. Sherbo District, Sierra Leone.	N. W. Thomas, Esq. (P.).
5–13. Ad. & hgr.	Nanna Kru, Liberia.	W. P. Lowe, Esq. (C.).
14. Ad.	Lagos.	Sir A. Moloney (P.).
15. Ad.	Odo Omi, head-water of Omi R., Lagos.	Major G. E. Bruce (P.).
16. Ad.	Niger.	Mr. J. T. Dalton (C.).
17. Ad.	Agberi, Lower Niger.	Dr. W. J. Ansorge (C.).
18–21. Yg.	Abo, ,,	,,
22–27. Yg.	Assay, ,,	,,
28. Ad.	,, ,,	,,
29. Hgr.	Kwale, Ethiope R., Lower Niger.	Capt. R. D. Gard'ner (P.).
30–31. Ad. & hgr.	Abogaji, head-waters of Aboina R., Cross R. system.	Major G. E. Bruce (P.).
32–34. Types.	Kondo-kondo, Ogowe.	Miss Kingsley (C.).
35–37. Ad. & hgr.	Ombrokua, ,,	Dr. W. J. Ansorge (C.).
38. Yg.	Eloby, Gaboon.	
39–40. Ad. & yg.	Gaboon.	

13. ANABAS MURIEI.

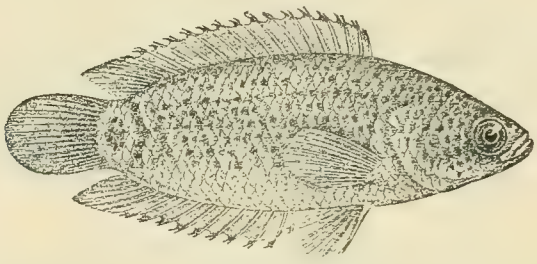
Ctenopoma petherici, part., Günth. Ann. & Mag. N. H. (3) xiii. 1864, p. 211, and Petherick's Trav. ii. p. 208 (1869).

Anabas petherici, Pellegr. Mém. Soc. Zool. France, xvii. 1905, p. 185.

Anabas muriei, Bouleng. Ann. & Mag. N. H. (7) xviii. 1906, p. 348, and Fish. Nile, p. 444, pl. lxxxiii. fig. 2 (1907).

Depth of body equal to length of head, $2\frac{3}{4}$ to 3 times in total length. Snout rounded, a little shorter than eye, which is $3\frac{1}{4}$ to $4\frac{1}{2}$ times in length of head and 1 to $1\frac{1}{2}$ times in interorbital width; maxillary extending to below anterior fourth or third of eye; palatine teeth present; præorbital and præoperculum entire; interoperculum often

Fig. 39.



Anabas muriei.
Type (F. N.).

entire; suboperculum finely serrated; operculum with two groups of strong serræ, with a deep notch between them. 5 or 6 very short gill-rakers on lower part of anterior arch. Dorsal XIV–XVI 8–10; spines subequal from the fifth or sixth, about $\frac{2}{5}$ length of head; longest soft rays about $\frac{3}{5}$ length of head. Anal IX–XI 8–10, similar to dorsal. Pectoral $\frac{2}{3}$ to $\frac{3}{4}$ length of head. Ventral reaching origin of anal or a little beyond. Caudal rounded. A mere indication of a caudal peduncle. Scales rugose and strongly ctenoid, 27–28 $\frac{3}{9-10}$; lateral lines $\frac{13-16}{10-13}$. Olive, with numerous small black spots; a blackish ocellar spot edged with yellowish at the root of, and partly upon, the caudal fin.

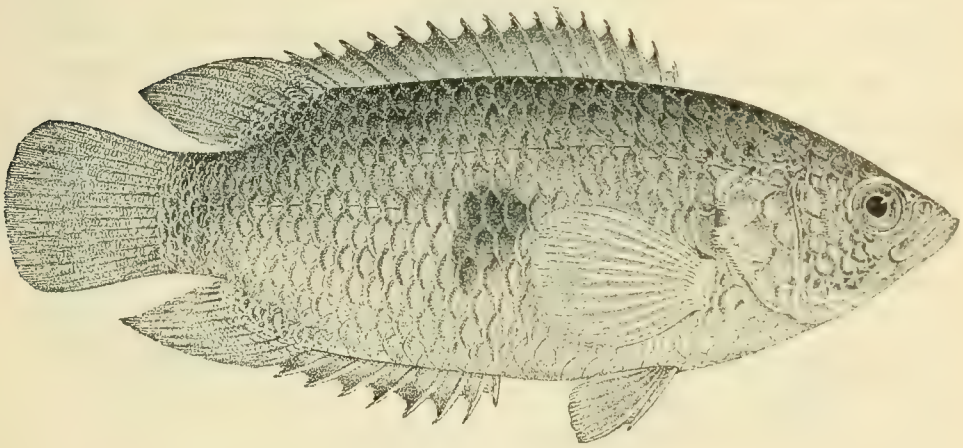
Total length 80 millim.

White Nile, Bahr-el-Gebel, Lake Victoria.

1–2. Types.	Kaka, White Nile.	L. Loat, Esq. (C.).
3–22. „	Gharb-el-Aish, White Nile.	„
23. Skel.	„ „	„

24. Hgr.	Khor Barboy, White Nile.	H. H. King, Esq. (P.).
25. Ad.	Lake No, ,,	,,
26–29. Types (also types of *A. petherici*).	Gondokoro, Bahr-el-Gebel.	J. Petherick, Esq. (C.).
30. Ad.	Bunjako, L. Victoria.	Mr. E. Degen (C.).
31. Ad.	Bujeju, S. Buddu, L. Victoria.	M. T. Dawe, Esq. (P.).
32–33. Ad. & yg.	L. Gangu, E. of L. Victoria.	C. W. Woodhouse, Esq. (P.).

Fig. 40.



Anabas maculatus.
Type of *A. pleurostigma* (P. Z. S. 1903). $\frac{5}{6}$.

14. ANABAS MACULATUS.

Ctenopoma maculata, Thomin. Bull. Soc. Philom. (7) x. 1886, p. 158; Pellegr. Bull. Mus. Paris, 1899, p. 359.

Ctenopoma multifasciata, Thomin. t. c. p. 159 ; Pellegr. t. c. p. 358.

Ctenopoma weeksii, Bouleng. Ann. & Mag. N. H. (6) xvii. 1896, p. 310.

Anabas weeksii, part., Bouleng. op. cit. (7) iii. 1899, p. 243, and Poiss. Bass. Congo, p. 377 (1901).

Anabas pleurostigma, Bouleng. Proc. Zool. Soc. 1903, i. p. 27, pl. v. fig. 1.

Anabas oxyrhynchus (non Bouleng.), Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 52.

Depth of body 2 to $2\frac{1}{2}$ times in total length, length of head $2\frac{1}{2}$ to 3 times. Snout rounded and as long as eye in adult, more pointed and a little shorter than eye in young; eye $3\frac{1}{2}$ (young) to 5 times in length of head, 1 to $1\frac{1}{2}$ times in interorbital width; maxillary extending to below anterior fourth or third of eye; palatine teeth present (may

be absent in the young); præorbital entire; angle of præoperculum sometimes slightly serrated; interoperculum and suboperculum entire or feebly serrated; operculum with two groups of strong serræ, with a deep notch between them. 7 to 9 very short gill-rakers on lower part of anterior arch. Dorsal XIV–XVI 9–11; spines subequal from the sixth or seventh, about $\frac{1}{3}$ length of head; longest soft rays $\frac{3}{5}$ to $\frac{2}{3}$ length of head. Anal VII–IX 9–11, similar to dorsal. Pectoral $\frac{2}{3}$ to $\frac{3}{4}$ length of head. Ventral not reaching beyond origin of anal. Caudal rounded. A mere indication of a caudal peduncle. Scales rugose and strongly ctenoid, 26–29 $\frac{2\frac{1}{2}-3}{9-10}$; lateral lines $\frac{14-19}{9-13}$. Brown or olive in the adult, with a large round blackish spot on the middle of the side, above the extremity of the pectoral fin; young variegated with brown and yellow in addition to the black lateral blotch, and with two oblique dark brown streaks behind the eye, the upper ascending to the upper border of the operculum, the lower descending to the angle of the præoperculum; ventrals black in the young.

Total length 200 millim.

South Cameroon to Congo.—Types in Paris Museum.

1–7. Types of *A. pleurostigma*.	Kribi R., S. Cameroon.	G. L. Bates, Esq. (C.).
8–13, 14. Ad., hgr., & yg.	Nyong R., „	„
15–23. Ad., hgr., & yg.	Ja R., „	„
24. Skel.	„ „	„
25. Yg., type of *Ct. weeksii*.	Monsembe, Upper Congo.	Rev. J. H. Weeks (P.).
26. Yg.	„ „	„

15. ANABAS OXYRHYNCHUS.

Bouleng. Ann. Mus. Congo, Zool. ii. p. 52, pl. xv. fig. 2 (1902).

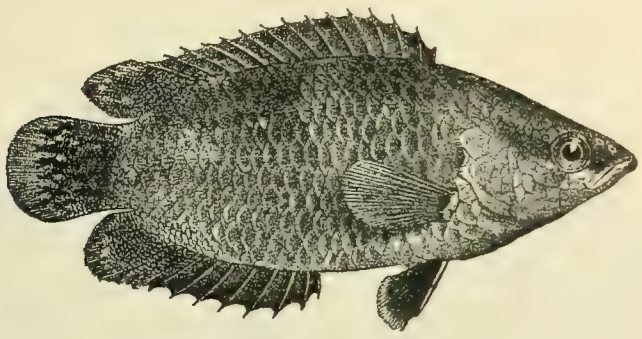
Depth of body $2\frac{2}{5}$ times in total length, length of head 3 times. Snout very pointed, as long as eye, which is 4 times in length of head and $1\frac{1}{2}$ in interorbital width; maxillary extending to below anterior third of eye; no palatine teeth; præorbital serrated behind; interoperculum and suboperculum strongly denticulate: 4 or 5 spines above and 1 or 2 below opercular notch. Dorsal XV 10; spines equal from the fourth, nearly $\frac{1}{3}$ length of head; soft portion thickly scaled, longest rays $\frac{1}{2}$ length of head. Anal VIII 10, similar to dorsal. Pectoral $\frac{3}{5}$ length of head. Ventral not reaching anal. Caudal short, rounded,

greater part covered with scales. Caudal peduncle merely indicated. Scales finely striated and ctenoid, 28 $\frac{2\frac{1}{2}}{9}$; lateral lines $\frac{14\text{-}16}{9\text{-}12}$. Dark brown, ventrals and caudal edged with white; a darker band on each side of the head, passing through the eye; another, oblique, below the eye.

Total length 100 millim.

Yembe River, Ubanghi.—Type in Congo Museum, Tervueren.

Fig. 41.



Anabas oxyrhynchus.
Type (A. M. C.). $\frac{5}{6}$.

16. ANABAS OCELLATUS.

Ctenopoma petherici (non Günth.), Schilth. Tijdschr. Nederl. Dierk. Ver. (2) iii. 1891, p. 84.

Ctenopoma ocellatum, Pellegr. Bull. Mus. Paris, 1899, p. 359.

Ctenopoma acutirostre, Pellegr. t. c. p. 360.

Ctenopoma denticulatum, Pellegr. t. c. p. 361.

Anabas weeksii, part., Bouleng. Ann. & Mag. N. H. (7) iii. 1899, p. 243, and Poiss. Bass. Congo, p. 377 (1901).

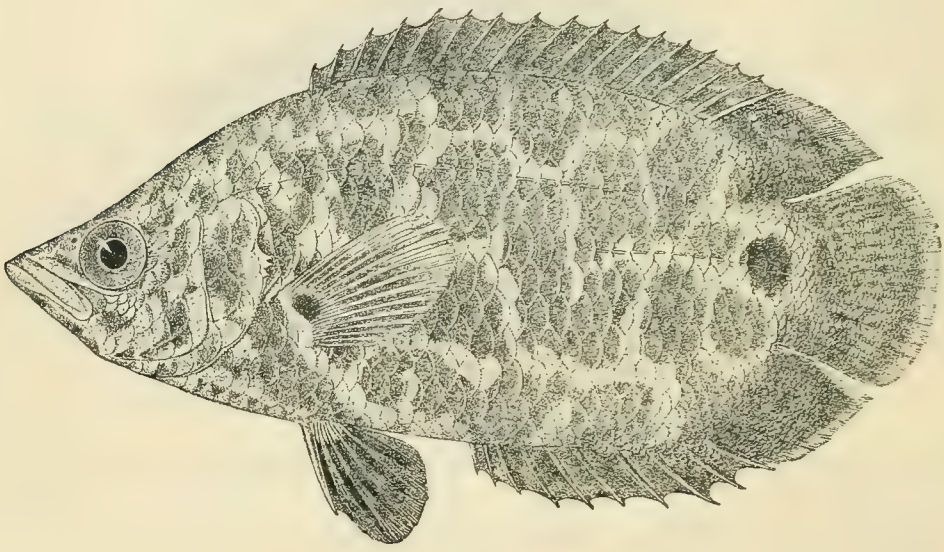
Anabas ocellatus, Bouleng. Ann. & Mag. N. H. (7) xvi. 1905, p. 53.

Anabas weeksii, Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 51.

Depth of body $1\frac{4}{5}$ to $2\frac{1}{4}$ times in total length, length of head $2\frac{1}{2}$ to 3 times. Snout very pointed, as long as eye; upper profile of head straight or concave; eye $3\frac{1}{3}$ to 4 times in length of head, 1 to $1\frac{1}{3}$ times in interorbital width; maxillary extending to below anterior border or anterior fourth of eye; palatine teeth present; præorbital entire; angle of præoperculum sometimes feebly serrated; interoperculum and suboperculum entire or serrated; several spines above and below opercular notch. 9 to 11 short gill-rakers on lower part of anterior arch. Dorsal XVI–XVIII 9–12; spines equal from the sixth or seventh, about

$\frac{1}{3}$ length of head. Anal IX–X 10–12. Soft dorsal and anal covered with scales and forming a nearly continuous outline with the short and likewise scaled caudal; no caudal peduncle whatever. Pectoral $\frac{2}{3}$ length of head. Ventral reaching origin of anal or a little beyond. Scales rugose and strongly ctenoid, 26–28 $\frac{3-4}{9-10}$; lateral lines $\frac{13-17}{7-13}$. Brownish with numerous irregular vertical darker bars or with round blackish spots, which may be so large as to be separated by a mere network of the lighter ground-colour; a black ocellar spot, edged with yellow, on

Fig. 42.



Anabas ocellatus.
Kondue.

the root of the caudal; soft dorsal and anal and caudal more or less distinctly edged with whitish.

Total length 140 millim.

Congo.—Types in Paris Museum.

1–2. Ad. & hgr.	Stanley Pool.	M. A. Greshoff (C.); Utrecht University (E.).
3–7, 8–10, 11–13. Ad., hgr., & yg.	Sankuru R. at Kondue, Kasai.	M. E. Luja (C.); Luxemburg Museum (P.).
14, 15–16. Ad. & yg.	Monsembe, Upp. Congo.	Rev. J. H. Weeks (P.).
17. Skel.	,, ,,	,,
18. Ad.	Stanley Falls.	M. De Meuse (C.).

Fam. 14. OPHIOCEPHALIDÆ.

An accessory superbranchial cavity, but no superbranchial organ. Mouth protractile, the maxillaries excluded from the oral border. Ventral fin, if present, near the pectoral, with six soft rays; pelvic bones connected with the clavicular symphysis by ligament. Dorsal and anal fins long, without spines. Ribs not confined to the præcaudal region, the anterior sessile, the remainder inserted on the parapophyses; epipleurals on the anterior ribs. Air-bladder present, much elongate, bifid behind, and extending far into the caudal region.

Asia and Africa.

1. OPHIOCEPHALUS.

Bloch, Nat. Ausl. Fische, vii. p. 137 (1793); Günth. Cat. Fish. iii. p. 468 (1861); Bouleng. Poiss. Bass. Congo, p. 367 (1901), and Fish. Nile, p. 437 (1907).

Body elongate, cylindrical or a little depressed in front, covered with small or moderately large cycloid or feebly ctenoid scales; lateral line complete, sometimes interrupted. Head depressed, flat and covered with large scales above; mouth large, with bands of cardiform teeth, often intermixed with enlarged canine-like teeth in the lower jaw; teeth on the vomer and palatines. Anterior nostril in a tentacle-like tube. Dorsal and anal fins much elongate. Ventral fins present. Vertebræ 39–61.

Eastern and South-Eastern Asia; Tropical Africa.

Synopsis of the Species.

D. 42–49; A. 30–34; Sc. 74–82; L. l. 26–36 . 1. *O. africanus*, Stdr., p. 69.
D. 40–45; A. 26–31; Sc. 62–76; L. l. 34–42 . 2. *O. obscurus*, Gthr., p. 70.
D. 40–43; A. 27–29; Sc. 83–90; L. l. 37–50 . 3. *O. insignis*, Sauv., p. 72.

1. OPHIOCEPHALUS AFRICANUS.

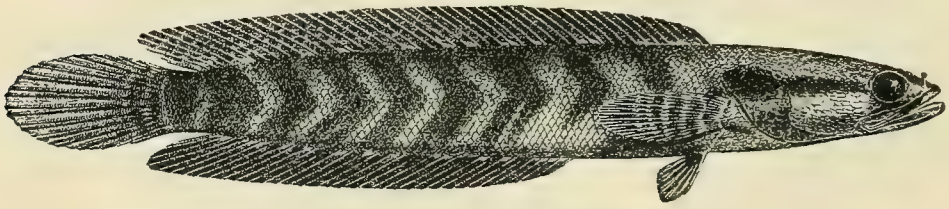
Ophiocephalus obscurus (non Günth.), J. A. Smith, Proc. R. Soc. Edinb. viii. 1873, p. 89.

Ophiocephalus africanus, Steind. Denkschr. Ak. Wien, xli. 1879, p. 15, pl. iii. fig. 2; Bouleng. Poiss. Bass. Congo, p. 369 (1901).

Depth of body $6\frac{1}{2}$ to $7\frac{1}{2}$ times in total length, length of head $3\frac{1}{4}$ to 4 times. Head 2 or $2\frac{1}{5}$ times as long as broad; lower jaw slightly projecting beyond upper; snout rounded, 1 to $1\frac{1}{2}$ times as long as eye,

which is 6 to 8 times in length of head and $1\frac{1}{2}$ to $2\frac{1}{2}$ times in inter-orbital width; maxillary extending beyond vertical of posterior border of eye; a few large canines on each side of lower jaw; nasal tentacle $\frac{2}{3}$ to 1 diameter of eye; 11 or 12 series of scales between eye and angle of præoperculum. 10 or 11 very short gill-rakers on lower part of anterior arch. Dorsal 42–49, longest rays $\frac{1}{3}$ to $\frac{1}{2}$ length of head. Anal 30–34. Pectoral $\frac{1}{2}$ to $\frac{3}{5}$ length of head, longer than ventral. Caudal subacuminate. Caudal peduncle $1\frac{1}{2}$ to 2 times as deep as long. Scales striated, cycloid, 74–82 above lateral line, $\frac{6}{12\text{-}15}$ below first dorsal ray; lateral-line tubes 26–36. Olive-brown above, greyish beneath, with a lateral series of large dark brown or blackish spots, with or without oblique bands above and below them, forming chevrons on the sides; a broad blackish band along each side of the head, behind the eye,

Fig. 43.



Ophiocephalus africanus.
Type, after Steindachner (*l. c.*). $\frac{1}{2}$.

followed by a large spot on the gill-cover; lower surface of head spotted or marbled with whitish; fins greyish or dark olive, spotted with black, pectoral with dark bars. Young yellowish, with a broad blackish lateral band extending on the caudal fin.

Total length 320 millim.

Lagos to Calabar.—Type in Stuttgart Museum.

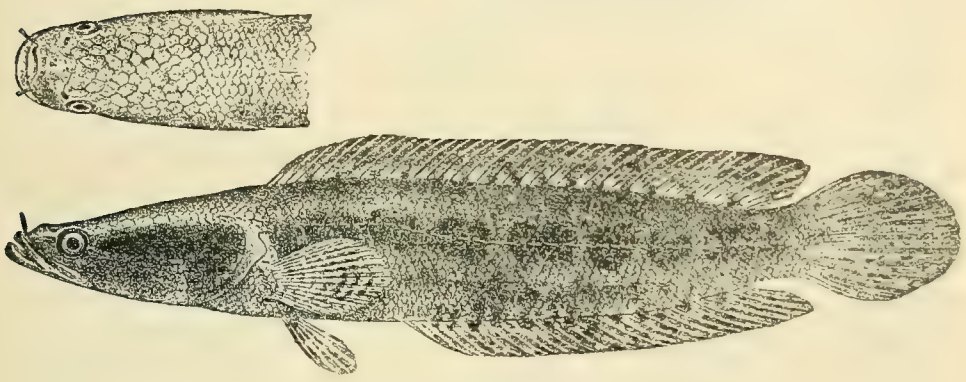
1. Ad.	Lagos.	Sir A. Moloney (P.).
2–5. Ad., hgr., & yg.	Assay, Lower Niger.	J. S. Budgett, Esq. (P.).
6. Hgr.	Old Calabar.	Dr. J. A. Smith (P.).

2. OPHIOCEPHALUS OBSCURUS.

Günth. Cat. Fish. iii. p. 476 (1861), and Petherick's Trav. ii. p. 215, pl. ii. fig. B (1869); Steind. Sitzb. Ak. Wien, lxxxiii. i. 1881, p. 197, and Notes Leyd. Mus. xvi. 1894, p. 36; Bouleng. Poiss. Bass. Congo, p. 368 (1901), and Fish. Nile, p. 438, pl. lxxxii. (1907); Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 48; Pellegr. Poiss. Bass. Tchad, p. 119, fig. (1914).

Depth of body 5 to $6\frac{1}{2}$ times in total length, length of head 3 to $3\frac{1}{2}$ times. Head $1\frac{3}{5}$ to 2 times as long as broad; lower jaw projecting beyond upper; snout rounded, 1 (young) to 2 times as long as eye, which is 5 (young) to 9 times in length of head and $1\frac{1}{2}$ to $2\frac{1}{5}$ times in interorbital width; maxillary extending beyond vertical of posterior border of eye; a few large canines on each side of lower jaw; nasal tentacle $\frac{3}{5}$ to $\frac{2}{3}$ diameter of eye; 10 to 12 series of scales between eye and angle of præoperculum. 8 or 9 short gill-rakers on lower part of anterior arch. Dorsal 40–45, longest rays $\frac{2}{5}$ to $\frac{3}{5}$ length of head. Anal 26–31. Pectoral $\frac{1}{2}$ to $\frac{3}{5}$ length of head, longer than ventral. Caudal

Fig. 44.



Ophiocephalus obscurus.
Gondokoro (F. N.). $\frac{1}{2}$.

rounded or subacuminate. Caudal peduncle $1\frac{1}{2}$ to $1\frac{2}{3}$ times as deep as long. Scales striated, with entire or feebly denticulate border, 62–76 above lateral line, $\frac{6-7}{12-15}$ below first dorsal ray; lateral-line tubes 34–42. Olive above, greyish beneath; a lateral series of large, rounded, oval, or rhombic dark spots edged with black, sometimes with a light outer border; irregular blackish spots above and beneath the lateral series; a broad blackish band along each side of the head, from the eye to the edge of the gill-cover; lower surface of head marbled with whitish; fins greyish olive, spotted with black. Young with a broad blackish lateral band to the root of the caudal fin, followed, on the basal part of the latter, by a small, black, light-edged ocellar spot.

Total length 350 millim.

White Nile, Bahr-el-Gebel, Chad Basin, Senegal to Congo.

1. Ad.	Gharb-el-Aish, White Nile.	L. Loat, Esq. (C.).
2–3. Ad.	Fashoda, „	„
4–9. Yg.	Nr. Gebel Ahmed Agar, White Nile.	H. H. King, Esq. (P.).
10–11. Ad.	Gondokoro, Bahr-el-Gebel.	J. Petherick, Esq. (C.).
12–13. Ad.	Fort Lamy, Shari R.	Capt. G. B. Gosling (P.).
14–17. Ad.	McCarthy Id., Gambia.	J. S. Budgett, Esq. (P.).
18. Ad.	Corbal R. at Tchitote, Portuguese Guinea.	Dr. W. J. Ansorge (C.).
19–20. Hgr.	N. Sherbo district, Sierra Leone.	N. W. Thomas, Esq. (P.).
21–26. Hgr. & yg.	Sapelle, Lower Niger.	„
27–28. Hgr. & yg.	Abo, „	„
29–31. Yg.	Assay, „	„
32. Ad.	Benue R., north of Ibi.	H. L. Norton Traill, Esq. (C.).
33–34. Ad.	Abogaji, head-water of Aboina R., Cross R.	Major G. E. Bruce (P.).
35. Ad.	Kribi R., S. Cameroon.	G. L. Bates, Esq. (C.).
36. Skel.	Gaboon.	R. B. N. Walker, Esq. (P.).
37. Ad.	Lambarene, Ogowe.	Miss Kingsley (C.).
38–39. Ad.	Komadekke, „	Dr. W. J. Ansorge (C.).
40–41. Ad. & yg.	Ngomo, „	Rev. E. Haug (C.); Paris Museum (E.).
42. Ad.	Boma, Lower Congo.	J. J. Monteiro, Esq. (C.).
43. Yg.	Leopoldville, Stanley Pool.	Drs. Dutton, Christy, and Todd (P.).
44. Ad.	Bolobo, Upper Congo.	Rev. G. Grenfell (P.).
45. Ad.	Monsembe, „	Rev. J. H. Weeks (P.).
46–47. Types.	W. Africa.	C. Swanzz, Esq. (P.).

3. OPHIOCEPHALUS INSIGNIS.

Sauv. Bull. Soc. Zool. France, 1884, p. 195, pl. v. fig. 3; Bouleng. Poiss. Bass. Congo, p. 369 (1901); Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 47.

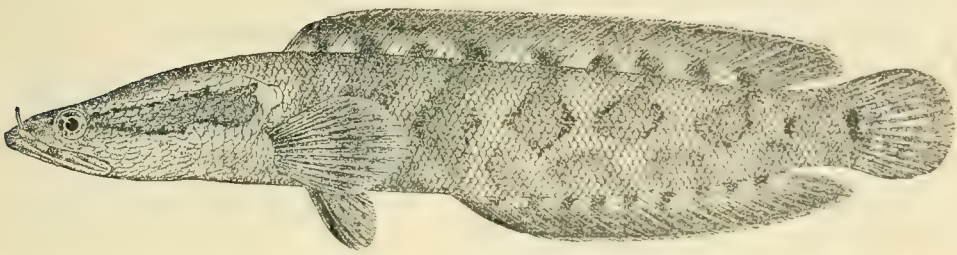
Barely distinguishable from the preceding by the smaller scales. Depth of body 6 to 7 times in total length. Dorsal 40–43. Anal 28–29. Scales 83–90 $\frac{8-9}{19-20}$; lateral line 37–50. Markings as in the preceding, but chevron-shaped dark bars across the back often connect the lateral spots.

Total length 410 millim.

Cameroon to Congo.—Type in Paris Museum.

1–2. Hgr.	Kondo-Kondo, Ogowe.	Miss Kingsley (C.).
3. Ad.	Ibali, L. Leopold II.	M. P. Delhez (C.).
4–5. Hgr.	Monsembe, Upper Congo.	Rev. J. H. Weeks (P.).
6. Ad.	Umangi, „	Capt. Wilverth (C.).
7. Ad.	Stanley Falls.	Rev. W. H. Bentley (C.).

Fig. 45.



Ophiocephalus insignis.
Ibali. $\frac{2}{5}$.

Fam. 15. ATHERINIDÆ.

Mouth protractile, the maxillaries excluded from the oral border; teeth in the jaws and on the pharyngeal bones. Two nostrils on each side. Two well-separated dorsal fins, the anterior, if not rudimentary, small and formed, at least in part, of non-articulated or spinous rays. Pectoral fins inserted high up. Ventral fins more or less behind the pectorals, with one spine and 5 soft rays; pelvic bones connected with the clavicular symphysis by ligament. Præcaudal vertebræ with strong parapophyses bearing the ribs; epipleurals inserted on the ribs. Vertebræ 32 to 60. Air-bladder present.

Mostly marine and represented in all parts of the world. Some species enter fresh waters, whilst others are entirely confined to these. Two genera have representatives in African fresh waters.

1. ATHERINA.

Linn. Syst. Nat. i. p. 519 (1766); Cuv. & Val. Hist. Poiss. x. p. 413 (1850); Günth. Cat. Fish. iii. p. 392 (1861); Boulenq. Fish. Nile, p. 423 (1907).
Ischnomembras, F. W. Fowler, Proc. Ac. Philad. lv. 1904, p. 730.

Cleft of mouth oblique; teeth small, conical. Body more or less elongate, subcylindrical or feebly compressed; scales cycloid, moderate or rather large, extending on parts of the head; no distinct lateral line. Anterior dorsal fin small but well developed, formed of 5 to 9 feeble

spines; second dorsal and anal fins opposite each other. Ventral fins inserted at a considerable distance behind the base of the pectorals. Vertebræ 43 to 56.

Seas of nearly the whole world, except the Arctic and Antarctic Regions. Four species are on record from fresh waters in Africa:—

I. First dorsal widely separated from second.

D. VI–VIII, I 11–13; A. I 12–13; 43–49 scales in longitudinal series . . . . . 1. *A. mochon*, C. & V., p. 74.

D. VI, I 9; A. I 16; 40 scales in longitudinal series . . . . . 2. *A. gabonensis*, H. W. Fowl., [p. 76.

II. First dorsal narrowly separated from second.

D. VII, I 15; A. I 16; 38 scales in longitudinal series . . . . . 3. *A. sikoræ*, Sauv., p. 76.

D. VI, I 10–12; A. I 14–16; 38–42 scales in longitudinal series . . . . . 4. *A. alaotrensis*, Pellegr., [p. 76.

1. ATHERINA MOCHON.

Atherina hepsetus, var., Delaroche, Ann. Mus. xiii. 1809, p. 358.

Atherina mochon, Cuv. & Val. Hist. Poiss. x. p. 434, pl. cccix. fig. 1 (1835); Guichen. Explor. Alg., Poiss. p. 67 (1850); Günth. Cat. Fish. iii. p. 396 (1861); Steind. Sitzb. Ak. Wien, lvii. i. 1868, p. 678; Canestr. Faun. d'Ital., Pesci, p. 116 (1874); Moreau, Poiss. France, iii. p. 209 (1881); Marion, Ann. Mus. Marseille, Zool. iv. 1891, p. 94; Lönnb. Bih. Svensk. Vet.-Ak. Handl. xxvi. iv. 1900, no. 8, p. 8; Bouleng. Fish. Nile, p. 423, fig. (1907).

Atherina risso, Cuv. & Val. t. c. p. 435; Playf. & Letourn. Ann. & Mag. N. H. (4) viii. 1871, p. 387; Moreau, t. c. p. 210; Borsieri, Zool. Anz. 1902, p. 599, and Contr. Con. Sp. Eur. Atherina, p. 47, pl. x. (1904).

Atherina sarda, Cuv. & Val. t. c. p. 435.

Atherina lacustris, Bonap. Icon. Faun. Ital., Pesci, pl. —, fig. 3 (1836); Martens, Arch. f. Naturg. xxiii. 1857, p. 167, pl. ix. figs. 1 & 2; Günth. t. c. p. 394; Canestr. op. cit. p. 9; Roule, C. R. Ac. Sci. cxxxvi. 1903, p. 824; H. W. Fowler, Proc. Ac. Philad. lv. 1904, p. 727.

Atherina caspia, Eichw. Bull. Soc. Nat. Mosc. 1838, p. 136, and Faun. Casp.-Cauc. p. 163, pl. xxxiii. figs. 1 & 2 (1841).

Atherina pontica, Eichw. ll. cc. pp. 137, 164, pl. xxxiii. figs. 3 & 4; Kessl. Trud. St. Petersb. Obshch. Estest. v. 1874, p. 296.

Atherina boieri (non Risso), Depéret, Bull. Soc. H. N. Toulouse, xvii. 1883, p. 82.

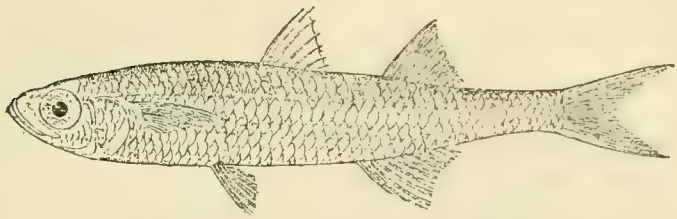
Atherina hyalosoma (Cocco), Facciola, Nat. Sicil. iv. 1885, p. 239.

Atherina riqueti, Roule, Zool. Anz. 1902, p. 262, fig., C. R. Ac. Sci. cxxxvi. 1903, p. 824, and cxxxvii. 1903, p. 1276.

Atherina sardinella, H. W. Fowler, t. c. p. 729, pl. xli.

Depth of body $4\frac{2}{3}$ to $6\frac{1}{3}$ times in total length, length of head 4 to $4\frac{1}{2}$ times. Snout rounded, shorter than eye, which equals length of post-orbital part of head and width of interorbital region; latter flat, with a low median keel; lower jaw slightly projecting; mouth extending to below anterior fourth of eye; teeth small, conical, in a narrow band. Gill-rakers nearly as long as gill-laminæ, 16–20 on lower part of anterior arch. Dorsals VI–VIII, I 11–13; second dorsal widely separated from first, originating above anterior third of anal. Anal I 12–13. Pectoral shorter than head, extending to above root of ventral, which is in advance of first dorsal. Caudal deeply forked. Caudal peduncle 2 to 3 times as long as deep. Scales smooth, 43–49 in longitudinal series, 20–26 round body in front of ventral fins (not more than 24 in var. *ægyptia*, Blgr.). Yellowish, with a silvery lateral stripe

Fig. 46.



Atherina mochon, var. *ægyptia*.
Egypt (F. N.).

running along the fourth or fifth row of scales below the spinous dorsal fin; upper half of body with dark brown dots, which may be crowded round the edges of the scales or form small blotches on the back; fins white.

Total length 120 millim. (North African specimens do not exceed 75).

Mediterranean, in some parts of North Africa and Southern Europe in fresh-water lakes.—Types in Paris Museum.

1–6. Ad.	Mediterranean Coast of Egypt.	Dr. Rüppell (P.).
7–16. Ad. & hgr.	L. Menzaleh.	L. Loat, Esq. (C.).
17–26. Ad. & hgr.	Nr. Ghet-el-Nassara, L. Menzaleh.	,,
27–36. Ad. & hgr.	Gemil, near L. Menzaleh.	,,
37–66. Ad. & hgr.	L. Temsah, near Suez.	Sir R. Owen (P.).
67–72, 73. Ad. & hgr.	Algeria.	Sir L. Playfair (P.).

2. ATHERINA GABONENSIS.

Ischnomembras gabunensis, H. W. Fowler, Proc. Ac. Philad. lv. 1904, p. 73. pl. xlii.

Atherina gabonensis, Bouleng. Ann. & Mag. N. H. (7) xvi. 1905, p. 52.

Depth of body 6 times in total length, length of head $3\frac{3}{4}$ times. Snout pointed, depressed, a little longer than eye, which is $3\frac{1}{4}$ times in length of head and nearly equals interorbital width; lower jaw slightly projecting; mouth not extending quite to below anterior border of eye; teeth minute, in a narrow band. Gill-rakers short, not more than $\frac{1}{2}$ length of gill-laminæ. Dorsals VI, I 9; second dorsal originating above middle of anal, widely separated from first. Anal I 16. Pectoral shorter than head, reaching a little beyond root of ventral. Caudal emarginate. Scales thin, about 40 in a longitudinal series. Pale brown, with a narrow silvery lateral band.

Total length 60 millim.

Gaboon River, West Africa.—Type in Museum of Academy of Philadelphia.

3. ATHERINA SIKORÆ.

Eleotris sikoræ, Sauv. Hist. Madag., Poiss. p. 521, pl. xliv. c. fig. 2 (1891); Pellegr. Bull. Mus. Paris, xiii. 1907, p. 206.

Depth of body equal to length of head, about 4 times in total length. Head flat above, a bony prominence on tip of snout; eye as long as snout, equal to interorbital width; lower jaw projecting; mouth extending to below centre of eye. Dorsals VII, I 15; second dorsal narrowly separated from first and exactly opposed to anal. Anal I 16. 38 scales in longitudinal series. Yellowish, with a dark (?silvery) lateral band, the scales above the band dark-edged; fins partly blackish.

Total length 115 millim.

Mountain streams, Eastern Madagascar.—Type in Paris Museum.

4. ATHERINA ALAOTRENSIS.

Pellegr. Bull. Soc. Zool. France, xxxix. 1914, p. 46.

Depth of body $3\frac{1}{4}$ to 4 times in total length, length of head $3\frac{1}{4}$ to $3\frac{2}{3}$ times. Head flat above; eye as long as or a little shorter than snout, $3\frac{1}{3}$ to $3\frac{3}{4}$ times in length of head, $1\frac{1}{4}$ to $1\frac{1}{3}$ times in interorbital width; lower jaw projecting; mouth extending a little beyond vertical of anterior border of eye. 10–11 moderately long gill-rakers on lower

part of anterior arch. Dorsals VI, I 10–12; second dorsal narrowly separated from first and exactly opposed to anal. Anal I 14–16. 38–42 scales in longitudinal series. Greenish above, yellow on the sides and below, with a narrow silvery lateral band; fins blackish grey, except the ventrals, which are yellow.

Total length 140 millim.

Lake Alaotra, Ambatondrazaka District, Madagascar.—Types in Paris Museum.

2. BEDOTIA.

Regan, Rev. Suisse Zool. xi. 1903, p. 416.

Distinguished from the preceding by the less protractile præmaxillary, the anterior part of which is separated by a notch from the lateral, and the more anterior position of the ventral fins.

Fresh waters of Madagascar.

Two species :—

D. V, I 11; A. I 18; ventral inserted below middle of pectoral . . . . 1. *B. madagascariensis*, Regan, p. 77.

D. IV–V, I 10–11; A. I 14–16; ventral inserted below posterior third of pectoral . . . . . 2. *B. geayi*, Pellegr., p. 77.

1. BEDOTIA MADAGASCARIENSIS.

Regan, l. c. pl. xiv. fig. 2.

Depth of body $4\frac{1}{4}$ times in total length, length of head $3\frac{3}{5}$ times. Snout scarcely longer than eye, which is $3\frac{1}{2}$ times in length of head and a little less than interorbital width; mouth extending to below anterior third of eye. Dorsals V, I 11, widely separated from each other. Anal I 18, originating below anterior dorsal. Pectoral $\frac{2}{3}$ length of head. Ventral only a little behind vertical of base of pectoral. Caudal truncate. Caudal peduncle $1\frac{1}{4}$ times as long as deep. 35 scales in longitudinal series, 8 in transverse series. Uniform brownish.

Total length 90 millim.

Madagascar.—Type in Geneva Museum.

2. BEDOTIA GEAYI.

Pellegr. Bull. Mus. Paris, xiii. 1907, p. 205.

Depth of body $3\frac{3}{4}$ to $4\frac{1}{3}$ times in total length, length of head 3 to $3\frac{1}{3}$ times. Snout as long as eye, which is 3 to $3\frac{1}{2}$ times in length of head and about $1\frac{1}{2}$ times in interorbital width; mouth extending to

below centre of eye. Dorsals IV–V, I 10–11. Anal I 14–16. Pectoral $\frac{2}{3}$ length of head. Ventral inserted below posterior third of pectoral. Caudal truncate. Caudal peduncle $1\frac{1}{4}$ to $1\frac{1}{3}$ times as long as deep. 32–35 scales in longitudinal series, 8–10 in transverse series. Brownish above, yellowish beneath; a dark lateral band, terminating in an irregular black spot on the caudal fin, which is orange above and crimson beneath.

Total length 90 millim.

Mountain streams of Mananjary, Madagascar.—Types in Paris Museum.

Fam. 16. MUGILIDÆ.

Mouth protractile, the maxillaries excluded from the oral border; teeth minute or absent; œsophageal opening much reduced by the complicated structure of the pharyngeal bones. Two nostrils on each side. Two well-separated dorsal fins, the anterior formed of a small number of pungent spines. Pectoral fins inserted high up. Ventral fins more or less behind the pectorals, with one spine and 5 soft rays; pelvic bones suspended from the post-clavicles. Præcaudal vertebræ with strong parapophyses bearing the ribs; epipleurals inserted on the ribs. Vertebræ 24 to 26. Air-bladder present.

Mostly marine and represented in all parts of the world. Many species enter fresh waters and a few are confined to these.

1. MUGIL.

Artedi, Gen. Pisc. p. 32 (1738); Cuv. & Val. Hist. Poiss. xi. p. 7 (1836); Günth. Cat. Fish. iii. p. 409 (1861); Bouleng. Poiss. Bass. Congo, p. 352 (1901), and Fish. Nile, p. 427 (1907).

Liza, Jord. & Swain, Proc. U.S. Nat. Mus. vii. 1884, p. 261.

Mouth small, transverse, with minute setiform teeth *, at least in the upper jaw; a more or less distinct knob at the symphysis of the lower jaw. Body elongate, feebly compressed, covered, like the head, with large scales, the edge of which may be finely denticulate; a scaly process on each side of the base of the anterior dorsal fin; no lateral line, but most of the scales bearing in the centre a pit or short open canal. Anterior dorsal fin with 3 to 5 spines, the first two or three

* These teeth are more developed in the young of certain species, which have for this reason, and in ignorance of the changes which take place with age, been referred to a different genus, *Myxus*, Gthr.

close together at the base. Anal fin opposite the second dorsal, with 3 feeble spines. Vertebræ 24 (12+12).

Distributed over all the temperate and tropical regions of the world; breeding in salt water.

Most, if not all, of the following species enter fresh waters, at least in some parts of their habitat. Only African specimens are recorded in this catalogue.

Synopsis of the Species.

I. Caudal deeply emarginate.

A. 39–47 scales in a longitudinal series; a large scaly process in axil of pectoral fin, which is shorter than head.

1. Eye with a much-developed adipose lid; pectoral $\frac{2}{3}$ to $\frac{3}{4}$ length of head; anal usually with 8 soft rays.

Mouth, seen from below, forming an obtuse angle . . . . . 1. *M. cephalus*, L., p. 80.

Mouth forming a right angle . . . . . 2. *M. oeur*, Forsk., p. 82.

2. Adipose eyelid rudimentary; pectoral $\frac{3}{5}$ to $\frac{2}{3}$ length of head; anal usually with 9 soft rays . . . . 3. *M. capito*, Cuv., p. 83.

B. 39–46 scales in a longitudinal series; no scaly process in axil of pectoral.

1. Upper lip not more than half diameter of eye.

40–46 scales in a longitudinal series; pectoral $\frac{3}{5}$ to $\frac{2}{3}$ length of head; anal with 9 soft rays . . . . . 4. *M. saliens*, Risso, p. 85.

40–46 scales; pectoral $\frac{3}{4}$ to once length of head; anal with 9 (rarely 8) soft rays . 5. *M. auratus*, Risso, p. 86.

39–42 scales; pectoral as long as head or a little shorter; anal with 11 soft rays . . 6. *M. falcipinnis*, C. & V., p. 88.

2. Upper lip thick, papillose, more than half diameter of eye; 41–45 scales; pectoral $\frac{2}{3}$ to $\frac{5}{6}$ length of head; anal with 9 soft rays . . . . . 7. *M. chelo*, Cuv., p. 89.

C. 31–42 scales in a longitudinal series; a large scaly process in axil of pectoral; anal with 9 soft rays.

38–42 scales; pectoral as long as head . . . 8. *M. seheli*, Forsk., p. 91.

35–38 scales; pectoral little more than $\frac{2}{3}$ length of head . . . . . 9. *M. robustus*, Gthr., p. 92.

31–33 scales; pectoral as long as head . . . 10. *M. ceylonensis*, Gthr., p. 93.

D. 27–35 scales in a longitudinal series; no scaly process in axil of pectoral; anal with 9 soft rays.

30–35 scales; pectoral $\frac{3}{4}$ to $\frac{5}{6}$ length of head . 11. *M. macrolepis*, A. Smith, p. 94.

34–35 scales; pectoral as long as head . . . 12. *M. hoefleri*, Stdr., p. 96.
27–30 scales; pectoral as long as or slightly shorter than head . . . . . 13. *M. grandisquamis*, C. & V., [p. 96.

II. Caudal feebly emarginate; 26–27 scales in a longitudinal series; no scaly process in axil of pectoral; anal with 7–8 soft rays . . . . . 14. *M. vaigiensis*, Q. & G., p. 97.

1. MUGIL CEPHALUS.

Linn. Syst. Nat. i. p. 520 (1766); Sonnini, Voy. Egypte, ii. p. 296, pl. xxiii. fig. 2 (1799); Delaroche, Ann. Mus. xiii. 1809, p. 358, pl. xx. fig. 4; Cuv. Règne Anim. 2nd ed. ii. p. 231 (1829); Bonap. Icon. Faun. Ital., Pesc. (1834); Cuv. & Val. Hist. Poiss. xi. p. 19, pl. cccvii. (1836); Lowe, Proc. Zool. Soc. 1843, p. 86; Guichen. Explor. Alg., Poiss. p. 67 (1850); Günth. Cat. Fish. iii. p. 417 (1861); Blanch. Poiss. France, p. 231 (1866); Steind. Sitzb. Ak. Wien, lvii. i. 1868, p. 680; Günth. Petherick's Trav. ii. p. 209 (1869); Steind. Sitzb. Ak. Wien, lxi. i. 1870, p. 952; Moreau, Poiss. France, iii. p. 183 (1881); Jord. & Everm. Fish. N. Amer. p. 811 (1896); Bouleng. Poiss. Bass. Congo, p. 353 (1901); H. W. Fowler, Proc. Ac. Philad. lv. 1904, pp. 743 & 744, fig.; Bouleng. Fish. Nile, p. 429, pl. lxxx. fig. 1 (1907).

Mugil albula, Linn. t. c. p. 520.

Mugil tang, Bloch, Nat. Ausl. Fische, viii. p. 171, pl. cccxcv. (1793).

Mugil plumieri, Bloch, t. c. p. 173, pl. cccxcvi.

Mugil lineatus, Cuv. & Val. t. c. p. 96.

Mugil constantiæ, Cuv. & Val. t. c. p. 107; A. Smith, Ill. Zool. S. Afr., Fishes, pl. xxviii. fig. 1 (1846); Casteln. Mém. Poiss. Afr. Austr. p. 48 (1861); Günth. Cat. t. c. p. 418, fig.

Mugil borbonicus, Cuv. & Val. t. c. p. 113; Sauv. Hist. Madag., Poiss. p. 395, pl. xlii. fig. 3 (1891).

Mugil rammelsbergii, Tschudi, Faun. Per., Ichth. p. 20 (1845).

Mugil berlandieri, Girard, U.S. Mex. Bound. Surv. i. Ichth. p. 20, pl. x. figs. 1–4 (1859).

? *Mugil camptosiensis*, Casteln. op. cit p. 48.

Mugil guentheri, Gill, Proc. Ac. Philad. 1863, p. 169.

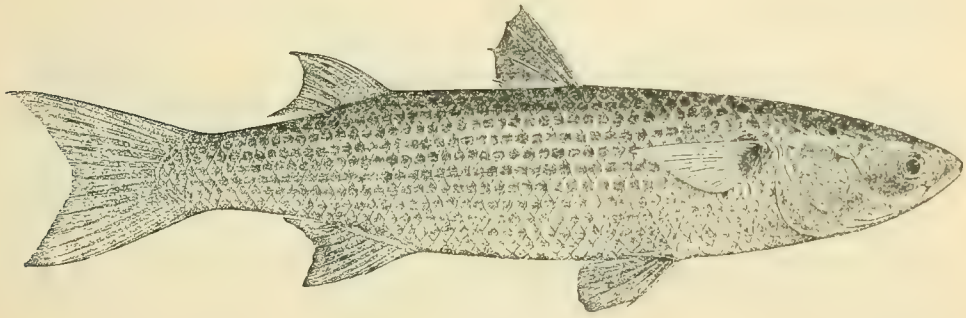
Mugil ashanteensis, Bleek. Nat. Verh. Vet. Haarlem, xviii. 1863, no. 2, p. 91, pl. xix. fig. 2; Steind. Sitzb. Ak. Wien, lxi. i. 1870, p. 953.

Mugil mexicanus, Steind. Sitzb. Ak. Wien, lxiii. i. 1875, p. 58, pl. viii.

Depth of body $3\frac{3}{4}$ to 5 times in total length, length of head 4 to $4\frac{1}{2}$ times (less in the very young). Snout as long as eye in adult, shorter in young; eye perfectly lateral in young, better visible from below than from above in adult, partly covered by a much developed adipose lid,

which extends in front of and behind the orbit, 3 (young) to 5 times in length of head, $1\frac{1}{2}$ to $2\frac{1}{2}$ times in interorbital width; nostrils rather widely separated from each other; mouth forming an obtuse angle, a semicircle in large specimens; maxillary almost completely hidden when the mouth is closed; a lanceolate space between the rami of the lower jaw; upper lip narrow, its width less than half diameter of eye; præorbital with the edge finely serrated; 2 series of scales on the cheek. Dorsals IV (exceptionally III), II 7; first two spines $\frac{2}{5}$ to a little more than $\frac{1}{2}$ length of head, longest soft ray $\frac{1}{2}$ to $\frac{3}{5}$ length of head; second dorsal originating above anterior third or middle of anal. Anal III 8 (very rarely 7 or 9). Pectoral $\frac{2}{3}$ to $\frac{3}{4}$ length of head; a large scaly process above the axil. Caudal forked, as long as or a little longer than head. Caudal peduncle $1\frac{1}{2}$ to $1\frac{2}{3}$ times as long as deep. 39–45

Fig. 47.



Mugil cephalus.
Samannud (F. N.). $\frac{1}{2}$.

scales in longitudinal series, 14–16 in transverse series. Bluish grey or greyish olive above, with darker streaks along the series of scales, silvery white beneath; fins greyish; a more or less distinct dark spot at the root of the pectoral fin; young uniform silvery.

Total length 560 millim.

From the Loire and the Mediterranean to South Africa and from the United States to Brazil; Pacific coast of South America.

1–8. Ad. & yg.	L. Menzaleh.	L. Loat, Esq. (C.).
9–16, 17–20. Yg.	Near Ghet-el-Nassara, L. Menzaleh.	,,
21–23. Hgr.	Fresh-water pool, near Ghet-el-Nassara, L. Menzaleh.	,,
24. Ad.	Near Gemil, L. Menzaleh.	,,

25. Yg.	Bahr-el-Tawilah, freshwater canal.	L. Loat, Esq. (C.).
26–29. Ad. & hgr.	Nile near Samannud.	„
30. Ad.	Nile.	S. S. Allen, Esq. (P.).
31–40. Ad., hgr., & egg.	St. Louis, Senegal.	M. P. Delhez (C.).
41. Yg.	St. Jago, Cape Verd.	H.M.S. 'Challenger.'
42. Ad.	Lagos.	J. Cadman, Esq. (P.).
43. Hgr.	Niger.	Mr. L. Fraser (C.).
44. Hgr.	Banana, Lower Congo.	Capt. Wilverth (C.).
45. Hgr.	Cabinda.	Dr. Jackson (C.); Hon. W. Rothschild (P.).
46, 47. Ad. & hgr., stffd.	Cape of Good Hope.	Sir A. Smith (P.).
48. Yg.	„	„
49. Hgr.	„	„
50–54. Yg.	Port Elizabeth.	F. W. Fitz Simons, Esq. (P.).
55. Ad.	Durban.	Mr. T. Ayres (C.).
56–57. Ad. & hgr.	Natal.	Dr. E. Warren (P.).

2. MUGIL OEUR.

Forsk. Descr. Anim. p. 74 (1775); Rüpp. N. Wirbelth. p. 131 (1840); Klunz. Verh. zool.-bot. Ges. Wien, xx. 1870, p. 829; Day, Fish. Ind. p. 353, pl. lxxv. fig. 3 (1876); Steind. Denkschr. Ak. Wien, xliv. 1882, p. 40; Klunz. Fische Roth. Meer. p. 132, pl. x. fig. 1 *b* (1884).

Mugil cephalotus, Cuv. & Val. Hist. Poiss. xi. p. 110 (1836); Günth. Cat. Fish. iii. p. 419 (1861); Kner, Novara, Fische, p. 224 (1865); Bleek. Poiss. Madag. p. 45, pl. ii. fig. 1 (1874); Sauv. Hist. Madag., Poiss. p. 402, pl. xlix. B. figs. 2 & 3 (1891).

Mugil borbonicus, Cuv. & Val. t. c. p. 113; Sauv. op. cit. p. 395, pl. xlii. fig. 3.

Myxus superficialis, Klunz. Verh. zool.-bot. Ges. Wien, xx. 1870, p. 831.

Myxus cœcutiens, Günth. Ann. & Mag. N. H. (4) xvii. 1876, p. 397; Sauv. op. cit. p. 404, pl. xlii. fig. 2.

Depth of body nearly equal to length of head, $3\frac{1}{2}$ to 4 times in total length. Snout as long as eye in adult, shorter in young; eye perfectly lateral in young, better visible from below than from above in adult, partly covered by a much developed adipose lid, which extends in front of and behind the orbit, 3 (young) to $4\frac{1}{3}$ times in length of head, $1\frac{1}{2}$ to 2 times in interorbital width; nostrils rather widely separated from each other; mouth forming a right angle; maxillary hidden when the mouth is closed; a lanceolate space between the rami of the mandible; upper lip narrow, its width less than $\frac{1}{2}$ diameter of eye; præorbital with the edge finely serrated; 2 or 3 series of scales on the cheek. Dorsals IV,

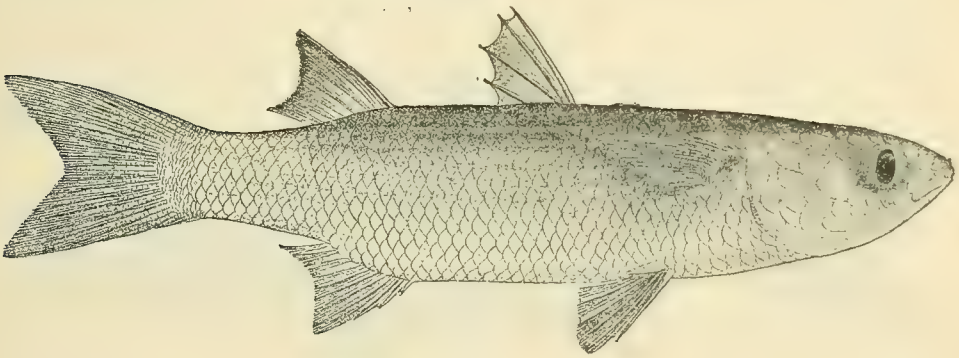
II 7; first two spines about $\frac{1}{2}$ length of head, longest soft ray $\frac{1}{2}$ to $\frac{3}{5}$ length of head; second dorsal originating above anterior third of anal. Anal III 8. Pectoral $\frac{2}{3}$ to $\frac{3}{4}$ length of head; a large scaly process above the axil. Caudal forked, as long as head. Caudal peduncle $1\frac{1}{3}$ to $1\frac{1}{2}$ times as long as deep. 40–45 scales in longitudinal series, 14–15 in transverse series. Silvery, bluish grey above, without or with slight traces of darker streaks running along the series of scales.

Total length 340 millim.

Indian Ocean, eastwards to Australia.

1–3. Hgr.	Socotra.	Prof. I. B. Balfour (P.).
4. Ad.	E. Madagascar.	Rev. R. Baron (C.).
5-6. Types of *Myxus cœcutiens.*	Rodriguez, in fresh water.	G. Gulliver, Esq. (C.).

Fig. 48.



Mugil oeur.
After Day (*op. cit.*). $\frac{2}{3}$.

3. MUGIL CAPITO.

Cuv. Règne Anim. 2nd ed. ii. p. 232 (1829); Bonap. Icon. Faun. Ital., Pesc. (1834); Cuv. & Val. Hist. Poiss. xi. p. 36, pl. cccviii. (1836); Yarrell, Brit. Fish. i. p. 200, fig. (1836); Guichen. Explor. Alg., Poiss. p. 67 (1850); Nilsson, Skand. Faun. iv. p. 176 (1855); Günth. Ann. & Mag. N. H. (3) vii. 1861, p. 346, and Cat. Fish. iii. p. 439 (1861); Blanch. Poiss. France, p. 248, fig. (1866); Steind. Sitzb. Ak. Wien, lvii. i. 1868, p. 680; Günth. Petherick's Trav. ii. p. 210 (1869); Moreau, Poiss. France, iii. p. 188 (1881); Day, Brit. Fish. p. 230, pl. xlvi. (1881); Lortet, Arch. Mus. Lyon, iii. 1883, p. 131, pl. x. fig. 2; Lilljeb. Sver. Norg. Fisk. i. p. 408 (1884); Smitt, Scand. Fish. i. p. 339, fig. (1893); Bouleng. Poiss. Bass. Congo, p. 355 (1901), and Fish. Nile, p. 432, pl. lxxx. fig. 2, and pl. lxxxi. fig. 1 (1907).

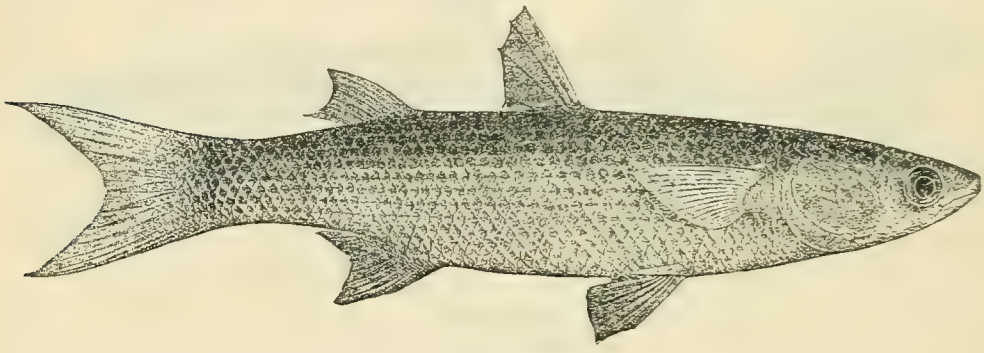
Mugil cephalus (non Linn.), Donovan, Brit. Fish. i. pl. xv. (1802).

Mugil cephalus, var. A, Risso, Ichthyol. Nice, p. 344 (1810).

Mugil ramada, Risso, Hist. Nat. Eur. Mérid. iii. p. 390 (1826).
Mugil britannicus, Hancock, Lond. Quart. Journ. Sc. 1830, p. 129.
Mugil dubahra, Cuv. & Val. t. c. p. 60.
Mugil capensis (non C. & V.), A. Smith, Ill. Zool. S. Afr., Fish. pl. xxx. fig. 1 (1846) ; Casteln. Mém. Poiss. Afr. Austr. p. 46 (1861).
Mugil multilineatus, A. Smith, l. c. fig. 2.
Mugil smithii, Casteln. op. cit. p. 47.
Mugil octoradiatus, Günth. Cat. iii. p. 437 (part.) ; Lortet, t. c. p. 133, pl. xi. fig. 2.
Mugil petherici, Günth. t. c. p. 441, and Petherick's Trav. ii. p. 211.
Mugil curtus (non Yarrell), Lortet, t. c. p. 132, pl. xi. fig. 1.
Mugil auratus (non Risso), Lortet, t. c. p. 134, pl. xi. fig. 3.
? *Liza alosoides*, H. W. Fowler, Proc. Ac. Philad. lv. 1903, p. 746, pl. xlv.

Depth of body 4 to 5 times in total length, length of head $3\frac{1}{4}$ (young) to $4\frac{1}{2}$ times. Snout nearly as long as eye in adult, shorter in young;

Fig. 49.



Mugil capito.
L. Menzaleh (F. N.). $\frac{1}{2}$.

eye perfectly lateral in young, better visible from below than from above in adult, with a mere rudiment of adipose lid, its diameter 3 (young) to 5 times in length of head, 1 to $2\frac{1}{3}$ times in interorbital width ; nostrils close together; mouth forming an obtuse angle ; maxillary nearly completely hidden when the mouth is closed ; upper lip narrow, its diameter less than half that of the eye ; a lanceolate space between the rami of the lower jaw ; præorbital with the edge finely serrated ; 4 or 5 series of scales on the cheek. Dorsals IV (exceptionally III or V), II 9–10 ; the first two spines $\frac{1}{2}$ to $\frac{3}{5}$ length of head, the longest ray about $\frac{1}{2}$ or a little less than $\frac{1}{2}$ length of head ; second dorsal originating above anterior third of anal. Anal III 9 (exceptionally 8 or 10). Pectoral $\frac{3}{5}$ to $\frac{2}{3}$ length of head ; a large scaly process above the axil. Caudal deeply emarginate,

as long as head. Caudal peduncle 1½ to 2 times as long as deep. 40–47 scales in longitudinal series, 14–16 in transverse series. Grey or greyish olive above, with more or less distinct darker streaks along the series of scales, silvery white beneath; fins greyish; often a very small dark spot in the upper part of the root of the pectoral fin; young uniform silvery.

Total length 400 millim.

Atlantic and Mediterranean, from Scandinavia to South Africa.—Types in Paris Museum.

1. Yg.	Mediterranean Coast of Egypt.	Dr. Rüppell (P.).
2–11. Ad., hgr., & yg.	L. Menzaleh.	L. Loat, Esq. (C.).
12–14. Hgr. & yg.	Ghet-el-Nassara, L. Menzaleh.	,,
15–18. Hgr. & yg.	Bahr-el-Tawilah, fresh-water canal.	,,
19. Yg.	Near Gemil, L. Menzaleh.	,,
20–23. Hgr.	Nile near Samannud.	,,
24. Type of *M. petherici*.	Nile at Cairo.	J. Petherick, Esq. (C.).
25–28, 29–32. Ad.	,,	,,
33–48. Yg.	L. Temsah, Isthmus of Suez.	Sir R. Owen (P.).
49–50. Ad. & yg.	Mazagan, Morocco.	Mr. F. W. Riggenbach (C.).
51–52. Ad.	Oum Erbiah, ,,	,,
53. Hgr.	Angola.	R. J. Cuninghame, Esq. (P.).
54. Ad., stffd., type of *M. multilineatus*.	Cape of Good Hope.	Sir A. Smith (P.).
55. Ad., stffd.	,,	,,
56, 57–58. Ad.	Table Bay.	Dr. J. D. F. Gilchrist (P.).
59–60. Ad.	Berg R., Cape Colony.	,,

4. MUGIL SALIENS.

Risso, Ichthyol. Nice, p. 345 (1810); Bonap. Icon. Faun. Ital., Pesc. (1834); Cuv. & Val. Hist. Poiss. xi. p. 47, pl. cccix. (1836); Guichen. Explor. Alg., Poiss. p. 67 (1850); Günth. Cat. Fish. iii. p. 443 (1861); Moreau, Poiss. France, iii. p. 191 (1881); Sauv. Hist. Madag., Poiss. p. 396 (1891).

Mugil capensis, Cuv. & Val. t. c. p. 108.

Mugil richardsonii, A. Smith, Ill. Zool. S. Afr., Fish. pl. xxix. fig. 1 (1846); Günth. t. c. p. 440.

Mugil euronotus, A. Smith, op. cit. pl. xxix. fig. 2.

Depth of body $4\frac{1}{3}$ to $5\frac{1}{3}$ times in total length, length of head $3\frac{1}{2}$ to $4\frac{1}{4}$ times. Snout as long as eye in young, longer in adult; eye perfectly lateral in young, better visible from below than from above in adult, with a rudiment of lid, 4 to $4\frac{1}{2}$ times in length of head, $1\frac{2}{3}$ to 2 times in interorbital width; nostrils close together; mouth forming an obtuse angle; a small part of the maxillary exposed when the mouth is closed; a lanceolate space between the rami of the mandible; upper lip narrow, its width less than $\frac{1}{2}$ diameter of eye; præorbital serrated; 4 or 5 series of scales on the cheek. Dorsals IV, II 7; first spine $\frac{1}{2}$ to $\frac{3}{5}$ length of head, longest soft ray not or but slightly longer; second dorsal originating above anterior third of anal. Anal III 9. Pectoral $\frac{3}{5}$ to $\frac{2}{3}$ length of head; no axillary scaly process. Caudal deeply forked, nearly as long as head. Caudal peduncle $1\frac{1}{2}$ to 2 times as long as deep. 40–46 scales in longitudinal series, 14–15 in transverse series. Silvery, back dark grey; dark streaks absent or feebly marked.

Total length 330 millim.

From the Gironde and the Mediterranean to South Africa.

1. Ad., stffd., type of *M. richardsonii*.	Cape of Good Hope.	Sir A. Smith (P.).
2. Ad., stffd., type of *M. euronotus*.	,,	,,
3. Ad., stffd.	,,	,,
4. Hgr.	,,	Haslar Collection.
5. Hgr.	Table Bay.	Dr. J. D. F. Gilchrist (P.).
6. Hgr.	St. James, Cape Colony.	,,
7–8. Hgr.	R. Chalumna, near King Williamstown.	Major H. Trevelyan (P.).

5. MUGIL AURATUS.

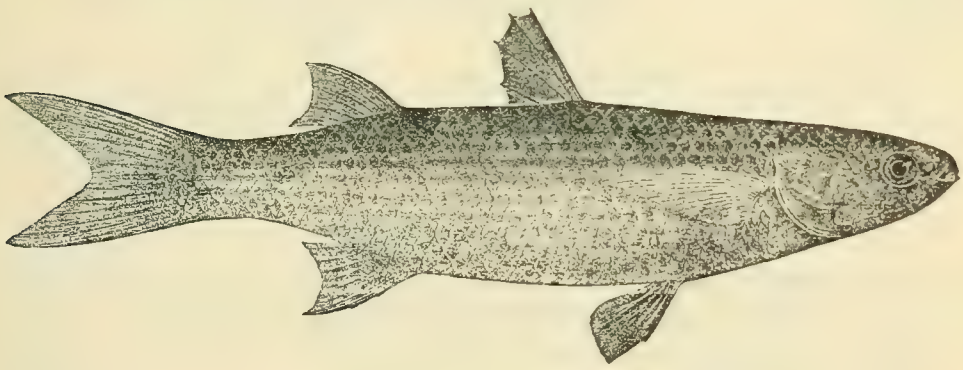
Risso, Ichthyol. Nice, p. 344 (1810); Bonap. Icon. Faun. Ital., Pesc. (1834); Cuv. & Val. Hist. Poiss. xi. p. 43, pl. cccviii. (1836); Lowe, Proc. Zool. Soc. 1843, p. 86; Guichen. Explor. Alg., Poiss. p. 67 (1850); Lowe, Fish. Madeira, p. 163 (1860); Günth. Ann. & Mag. N. H. (3) vii. 1861, p. 346, and Cat. Fish. iii. p. 442 (1861); Steind. Sitzb. Ak. Wien, lxii. i. 1868, p. 682; Moreau, Poiss. France, iii. p. 185 (1881); Lilljeb. Sver.-Norg. Fisk. i. p. 413 (1884); Smitt, Scand. Fish. i. p. 339, fig. (1893); Bouleng. Poiss. Bass. Congo, p. 356 (1901), and Fish. Nile, p. 435, pl. lxxxi. fig. 2 (1907).

Mugil cryptochilus, Cuv. & Val. t. c. p. 61; Günth. Petherick's Trav. ii. p. 213 (1869).

Mugil chelo (non Cuv.), Lowe, Tr. Zool. Soc. ii. 1839, p. 184.
Mugil maderensis, Lowe, Proc. Zool. Soc. 1839, p. 82, and Tr. Zool. Soc. iii. 1842, p. 8.
Mugil natalensis, Casteln. Mém. Poiss. Afr. Austr. p. 50 (1861); Gilchrist & Thompson, Ann. S. Afr. Mus. xi. 1911, p. 43.
Mugil octoradiatus, Günth. Ann. & Mag. N. H. (3) vii. 1861, p. 347.
Mugil octoradiatus, part., Günth. Cat. t. c. p. 437.
? *Mugil saliens* (non Risso), Günth. Petherick's Trav. ii. p. 213.
Myxus curvidens, Steind. Denkschr. Ak. Wien, xliv. 1882, p. 42.

Depth of body $3\frac{1}{2}$ to 5 times in total length, length of head 4 to 5 times. Snout as long as or a little longer than eye in adult, shorter in young; eye better visible from below than from above in adult; a mere

Fig. 50.



Mugil auratus.
L. Menzaleh (F. N.). $\frac{1}{2}$.

rudiment of adipose eyelid; diameter of eye 4 to 5 times in length of head, $1\frac{1}{2}$ to $2\frac{1}{2}$ times in interorbital width; nostrils close together; mouth forming an obtuse angle; maxillary entirely or almost entirely hidden when the mouth is closed; upper lip rather narrow, not exceeding $\frac{1}{2}$ diameter of eye; a lanceolate space between the rami of the lower jaw; præorbital with the edge finely serrated. Dorsals IV, II 7; the first two spines measuring $\frac{1}{2}$ to $\frac{3}{5}$ length of head, longest soft ray about the same length; second dorsal originating above anterior third of anal. Anal III 9 (exceptionally 8). Pectoral $\frac{3}{4}$ to once length of head; no scaly process above the axil. Caudal forked, as long as or a little longer than head. Caudal peduncle $1\frac{1}{3}$ to 2 times as long as deep. 40–46 scales in longitudinal series, 13–15 in transverse series. Greyish brown above, silvery white beneath; more or less

distinct dark streaks along the series of scales; one or two golden-yellow, bronzy-yellow, or golden-orange spots between the eye and the border of the gill-cover; a dark red mark may be present in the centre of the golden spot; ventral and anal fins white, the other fins brownish grey.

Total length 400 millim.

Atlantic and Mediterranean, from Scandinavia to South Africa *.

1–5. Ad. & hgr.	L. Menzaleh.	L. Loat, Esq. (C.).
6–7. Ad.	Near Gemil, L. Menzaleh.	,,
8–11. Ad. & hgr.	L. Borollos.	,,
12. Ad.	Madeira.	J. Y. Johnson, Esq. (P.).
13. Ad.	,,	Hon. C. Baring and W. R. Ogilvie-Grant, Esq. (P.).
14–16. Yg.	Porto Grande, Canary Ids.	Paris Museum (P.).
17. Ad.	Lanzarote, Canary Ids.	Rev. R. T. Lowe (P.).
18. Yg.	Cape Verd Ids.	,,
19–23. Hgr. & yg.	St. Louis, Senegal.	M. P. Delhez (C.).
24. Yg.	Banana, Lower Congo.	Capt. Wilverth (C.).

6. MUGIL FALCIPINNIS.

Cuv. & Val. Hist. Poiss. xi. p. 105 (1836); Steind. Sitzb. Ak. Wien, lxi. i. 1870, p. 955; Perugia, Ann. Mus. Genova, (2) x. 1891, p. 969; Steind. Notes Leyd. Mus. xvi. 1894, p. 35; Bouleng. Poiss. Bass. Congo, p. 357 (1901).

Depth of body $3\frac{1}{2}$ to $3\frac{2}{3}$ times in total length, length of head $3\frac{1}{2}$ to $4\frac{1}{2}$ times. Snout as long as eye in adult, shorter in young; eye better visible from below than from above, with a rudiment of lid, $3\frac{1}{3}$ (young) to 4 times in length of head, $1\frac{1}{2}$ to 2 times in interorbital width; mouth forming an obtuse angle; maxillary entirely concealed when the mouth is closed; upper lip narrow, not more than $\frac{1}{2}$ diameter of eye; a lanceolate space between rami of mandible; præorbital denticulate; 3 or 4 series of scales on the cheek. Dorsals IV, I 9; first and second spines $\frac{1}{2}$ to $\frac{3}{5}$ length of head, longest soft ray $\frac{2}{3}$ to $\frac{3}{4}$ length of head; second dorsal originating above middle of anal. Anal III 11. Pectoral as long as or a little shorter than head, without axillary process. Caudal forked, longer than head. Caudal peduncle as long as deep or a little longer. 39–42 scales in longitudinal series, 13–15 in transverse series.

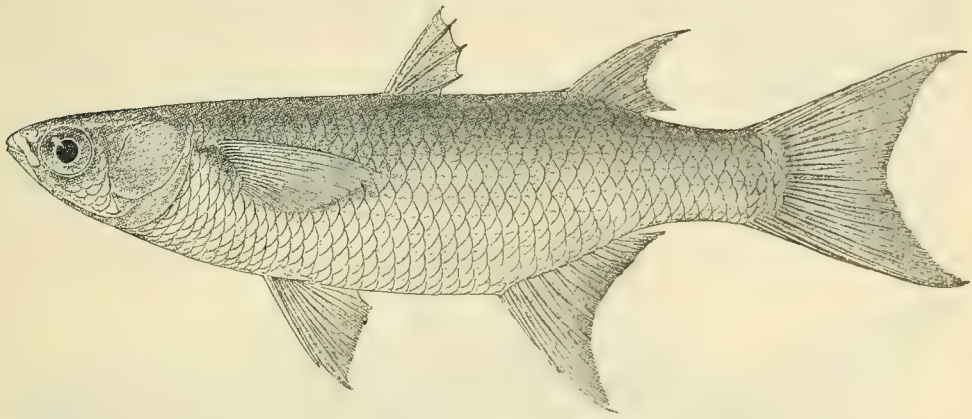
* I have examined a specimen from East London, preserved in the S. African Museum.

Silvery, brown or olive above; fins grey; a more or less distinct dark spot at base of pectoral.

Total length 240 millim.

West Coast of Africa, from Senegambia to Angola.—Type in Paris Museum.

Fig. 51.



Mugil falcipinnis.
Benito River. ½.

1–6. Ad., hgr., & yg.	St. Louis, Senegal.	M. P. Delhez (C.).
7–8. Ad.	Gambia.	J. S. Budgett, Esq. (C.).
9. Ad.	Nanna Kru, Liberia.	W. P. Lowe, Esq. (C.).
10. Skel.	„ „	„
11. Yg.	Lagos.	J. Cadman, Esq. (P.).
12. Yg.	Lagos.	
13, 14, 15. Ad. & hgr.	Niger.	Mr. J. T. Dalton (C.).
16. Yg.	Niger Delta.	Mr. J. Paul Arnold (P.).
17, 18. Hgr.	Old Calabar.	Miss Kingsley (C.).
19. Ad.	Benito R.	G. L. Bates, Esq. (C.).
20, 21. Hgr.	Gaboon.	
22. Yg.	Chiloango Town.	Dr. W. J. Ansorge (C.).
23. Ad.	Luali R. at Buco Zau.	„
24–26. Ad. & hgr.	Banana, Congo.	M. P. Delhez (C.).
27. Yg.	„ „	Capt. Wilverth (C.).
28. Ad.	Bengo R. at Cabiri, Angola.	Dr. W. J. Ansorge (C.).

7. MUGIL CHELO.

Cuv. Règne Anim. 2nd ed. ii. p. 232 (1829); Bonap. Icon. Faun. Ital., Pesc. (1834); Cuv. & Val. Hist. Poiss. xi. p. 50, pl. cccix. (1836); Yarrell, Brit. Fish. i. p. 207 (1836); Günth. Cat. Fish. iii. p. 454 (1861); Steind. Sitzb.

Ak. Wien, lvii. i. 1868, p. 683; Moreau, Poiss. France, iii. p. 195 (1881); Day, Brit. Fish. p. 232, pl. lxvii. (1881); Smitt, Scand. Fish. i. p. 334, pl. xv. fig. 11 (1893).

Mugil cephalus, var. B, Delaroche, Ann. Mus. Paris, xiii. 1809, p. 358, pl. xxi. fig. 7.

Mugil cephalus (non L.), Risso, Ichthyol. Nice, p. 343 (1810).

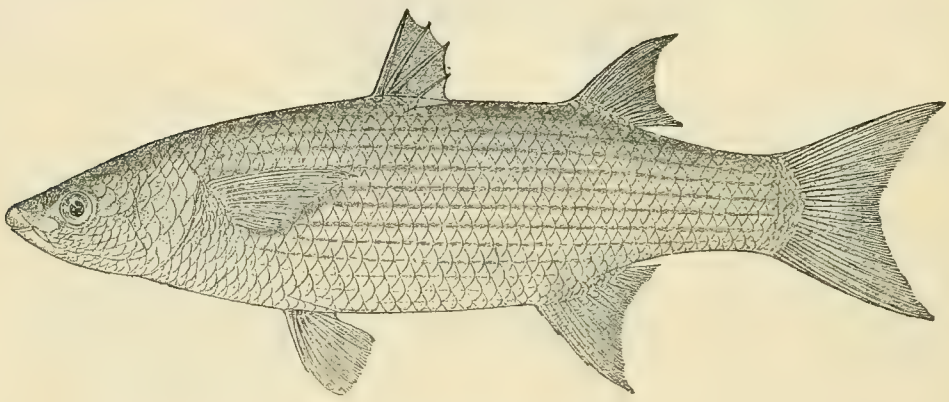
Mugil labrosus, Risso, Hist. Nat. Eur. Mérid. iii. p. 389 (1826).

Mugil corrugatus, Lowe, Tr. Zool. Soc. ii. 1839, p. 184, and Fish. Madeira, p. 155 (1860).

Mugil septentrionalis, Günth. Cat. t. c. p. 455.

Depth of body $3\frac{1}{2}$ to $4\frac{1}{3}$ times in total length, length of head 4 to $4\frac{1}{3}$ times. Snout as long as eye in young, longer in adult; eye perfectly

Fig. 52.



Mugil chelo.
Madeira. $\frac{1}{3}$.

lateral or a little better visible from below than from above, with a mere rudiment of lid, 4 (young) to $5\frac{1}{2}$ times in length of head, $1\frac{2}{3}$ to $2\frac{2}{3}$ times in interorbital width; nostrils close together; mouth forming an obtuse angle; maxillary exposed; upper lip thick and broad, papillose, its width more than $\frac{1}{2}$ diameter of eye, nearly equal to eye in adult; mandibles in contact on the median line, entirely or nearly entirely covering the chin; edge of præorbital finely denticulated; 4 or 5 series of scales on the cheek. Dorsals IV, II 7–8; first spine $\frac{1}{2}$ to $\frac{3}{5}$ length of head, longest soft ray about $\frac{2}{3}$; second dorsal originating above anterior third or middle of anal. Anal III 9. Pectoral $\frac{2}{3}$ to $\frac{5}{6}$ length of head; no scale process above the axil. Caudal deeply emarginate, as long as or a little longer than head. Caudal peduncle $1\frac{1}{2}$ to $1\frac{2}{3}$ times as long as deep. 41–45 scales in longitudinal series, 14–15 in transverse

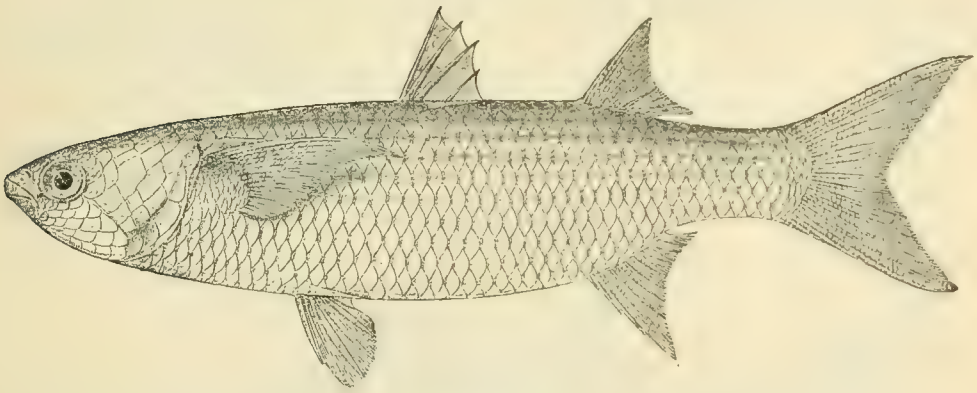
series. Silvery or golden, back bluish grey; dark streaks along the series of scales.

Total length 550 millim.

Atlantic, from Scandinavia to the Canary Ids. and Mediterranean.—Type in Paris Museum.

1–2. Yg.	Coast of Egypt.	J. Petherick, Esq. (C.).
3. Ad.	Madeira.	Hon. C. Baring and W. R. Ogilvie-Grant, Esq. (P.).
4. Yg.	„	J. Y. Johnson, Esq. (P.).
5. Ad.	Lanzarote, Canary Ids.	Rev. R. T. Lowe (P.).

Fig. 53.



Mugil seheli.
Zanzibar. $\frac{2}{5}$.

8. MUGIL SEHELI.

Forsk. Descr. Anim. p. 73 (1775); Cuv. & Val. Hist. Poiss. xi. p. 152 (1836); Klunz. Verh. zool.-bot. Ges. Wien, xx. 1870, p. 827; Day, Fish. Ind. p. 355 (1876); Klunz. Fische Roth. Meer. p. 132, pl. x. fig. 1 (1884).

Mugil cæruleo-maculatus, Lacep. Hist. Poiss. v. pp. 385, 389 (1802); Cuv. & Val. t. c. p. 128; Günth. Cat. Fish. iii. p. 445 (1861); Day, op. cit. p. 356; Sauv. Hist. Madag., Poiss. p. 398, pl. xliii. fig. 2 (1891).

Mugil axillaris, Cuv. & Val. t. c. p. 131; Günth. t. c. p. 444, and Fische Südsee, p. 216, pl. cxx. fig. B (1877); Sauv. op. cit. p. 397, pl. xliii. fig.

? *Myxus trimaculatus*, Klunz. Verh. zool.-bot. Ges. Wien, xx. 1870, p. 832.

Depth of body $3\frac{1}{3}$ to 4 times in total length, length of head 4 to $4\frac{2}{3}$ times. Snout as long as eye in adult, shorter in young; eye better visible from below than from above, with mere rudiments of lids, $3\frac{1}{2}$ to $4\frac{2}{3}$ times in length of head, $1\frac{2}{3}$ to $2\frac{1}{3}$ times in interorbital width;

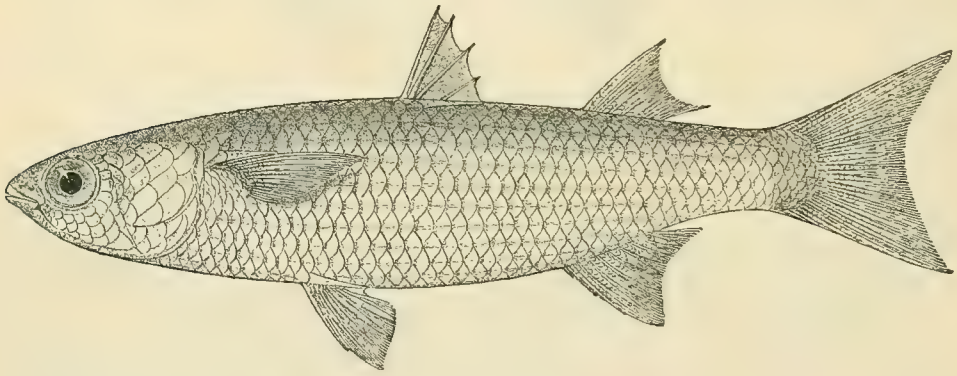
nostrils moderately distant from each other; mouth forming an obtuse angle; maxillary entirely hidden when the mouth is closed; mandibles entirely covering the chin; upper lip narrow, not $\frac{1}{2}$ diameter of eye; edge of præorbital finely denticulated; 4 series of scales on the cheek. Dorsals IV, I 8; first spine $\frac{1}{2}$ to $\frac{3}{5}$ length of head, longest soft ray $\frac{3}{5}$ to $\frac{3}{4}$ length of head. Anal III 9. Second dorsal and anal opposite each other. Pectoral as long as head; a large scaly process above the axil. Caudal deeply forked, longer than head. Caudal peduncle $1\frac{1}{3}$ to $1\frac{2}{3}$ times as long as deep. 38–42 scales in longitudinal series, 13–14 in transverse series. Silvery, back brownish or greenish; a black spot at the base of the upper rays of the pectoral.

Total length 370 millim.

From the Red Sea to Natal, eastwards to the South Pacific.

1. Hgr.	Red Sea.	Dr. Klunzinger (P.).
2. Yg.	„	W. Jesse, Esq. (C.).
3. Hgr.	Massowa.	Marquis G. Doria (P.).
4. Ad.	Seychelles.	Sir L. Playfair (C.).
5–6. Ad. & hgr.	Zanzibar.	„
7–8. Ad. & hgr.	Mombasa.	R. J. Cuninghame, Esq. (P.).
9. Ad.	Durban.	Mr. T. Ayres (C.).

Fig. 54.



Mugil robustus.
Type. $\frac{2}{3}$.

9. MUGIL ROBUSTUS.

Günth. Cat. Fish. iii. p. 432 (1861); Sauv. Hist. Madag., Poiss. p. 400, pl. xli. B. fig. 6 (1891).

Depth of body equal to length of head, 4 times in total length. Snout as long as or a little shorter than eye; latter better visible from

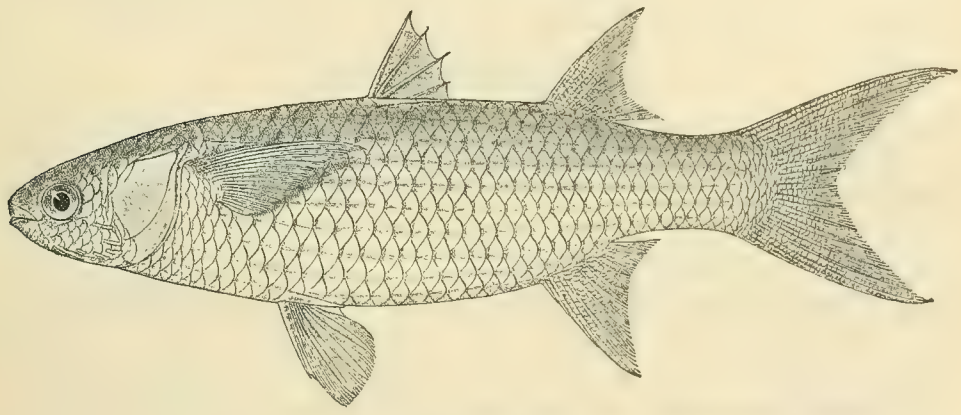
below than from above, with a rudiment of lid, $3\frac{2}{3}$ to $4\frac{1}{3}$ times in length of head, $1\frac{2}{3}$ to 2 times in interorbital width; mouth forming an obtuse angle; maxillary entirely concealed when the mouth is closed; upper lip narrow, not $\frac{1}{2}$ diameter of eye; mandibles nearly entirely covering the chin, the space between them very narrow; nostrils rather widely separated from each other; præorbital very finely denticulated; 4 series of scales on the cheek. Dorsals IV, I 8; first and second spines and longest soft ray about $\frac{1}{2}$ length of head; second dorsal originating above anterior third of anal. Anal III 9. Pectoral a little more than $\frac{2}{3}$ length of head; a large scaly process above the axil. Caudal deeply notched, as long as head. Caudal peduncle $1\frac{2}{3}$ times as long as deep. 35–38 scales in longitudinal series, 12 in transverse series. Golden, greenish above; a small black spot in the axil of the pectoral.

Total length 240 millim.

Madagascar and Coast of Zululand.

1. Type.	Madagascar.	Dr. J. E. Gray (P.).
2. Ad.	Kosi Bay, Zululand.	Dr. E. Warren (P.).

Fig. 55.



Mugil ceylonensis.
Zanzibar. $\frac{2}{3}$.

10. MUGIL CEYLONENSIS.

Günth. Cat. Fish. iii. p. 446 (1861); Playf. & Günth. Fish. Zanzibar, p. 79 (1866); Gilchrist & Thompson, Ann. S. Afr. Mus. xi. 1911, p. 43.

? *Mugil radians*, Castelu. Mém. Poiss. Afr. Austr. p. 49 (1861).

Depth of body $3\frac{1}{2}$ to $4\frac{1}{3}$ times in total length, length of head 4 to $4\frac{1}{3}$ times. Snout as long as eye in adult, shorter in young; eye nearly

perfectly lateral, with a mere rudiment of lid, $3\frac{1}{2}$ (young) to 5 times in length of head, $1\frac{1}{2}$ to nearly 3 times in interorbital width; mouth forming an obtuse angle; maxillary entirely concealed when the mouth is closed; upper lip narrow, not more than $\frac{1}{2}$ diameter of eye; mandibles nearly entirely covering the chin, the space between them very narrow; nostrils rather widely separated from each other; præorbital denticulated; 3 or 4 series of scales on the cheek. Dorsals IV, I 8; first and second spines $\frac{1}{2}$ to $\frac{3}{5}$ length of head, longest soft ray $\frac{2}{3}$ to $\frac{3}{4}$ length of head; second dorsal and anal exactly opposed. Anal III 9. Pectoral as long as head; a large scaly process above the axil. Caudal deeply forked, longer than head, scaly like the soft dorsal and anal. Caudal peduncle $1\frac{1}{2}$ to $1\frac{2}{3}$ times as long as deep. 31–33 scales in longitudinal series, 11–12 in transverse series. Silvery, back greenish olive, with or without rather indistinct and interrupted darker longitudinal streaks; a small black spot at the base of the pectoral.

Total length 480 millim.

East Coast of Africa and Natal to Ceylon.

1. Ad.	Kosi Bay, Zululand.	Dr. E. Warren (P.).
2–3. Ad. & yg.	Zanzibar.	Sir L. Playfair (P.).

11. MUGIL MACROLEPIS.

Mugil macrolepis, A. Smith, Ill. Zool. S. Afr., Fish. pl. xxviii. fig. 2 (1846); Casteln. Mém. Poiss. Afr. Austr. p. 47 (1861).

Mugil troschelii, Bleek. Nat. Tijdschr. Nederl. Ind. xvi. 1858, p. 277; Günth. Cat. Fish. iii. p. 448 (1861).

? *Mugil crenilepis*, Casteln. op. cit. p. 49.

Mugil smithii (non Casteln.), Günth. Cat. t. c. p. 447; Sauv. Hist. Madag., Poiss. p. 399, pl. xli. B. fig. 4 (1891).

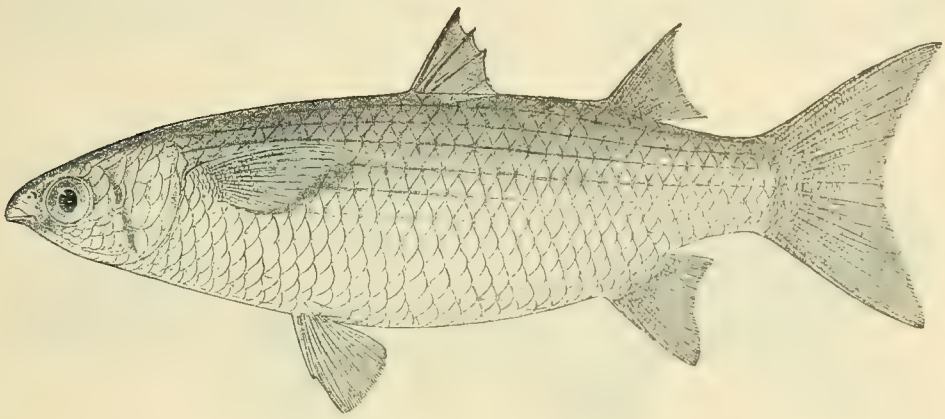
Mugil rodericensis, Günth. Ann. & Mag. N. H. (4) xvii. 1876, p. 397.

Mugil diadema, Gilchrist & Thompson, Ann. S. Afr. Mus. xi. 1911, p. 42.

Depth of body $3\frac{1}{3}$ to $4\frac{1}{4}$ times in total length, length of head 4 to $4\frac{1}{2}$ times. Snout as long as eye in adult, shorter in young; eye better visible from below than from above, with a rudimentary adipose lid, $3\frac{1}{3}$ (young) to $4\frac{1}{4}$ times in length of head, $1\frac{1}{2}$ to 2 times in interorbital width; nostrils close together; mouth forming an obtuse angle; end of maxillary exposed when the mouth is closed; a narrow lanceolate space between the rami of the mandible; upper lip narrow, its width less than $\frac{1}{2}$ diameter of eye; præorbital with the edge finely serrated; 3 or

4 series of scales on the cheek. Dorsals IV, I 8 (rarely 7); first two spines $\frac{1}{2}$ to $\frac{3}{5}$ length of head; longest soft ray $\frac{3}{5}$ to $\frac{2}{3}$ length of head; second dorsal originating above anterior rays or anterior third of anal. Anal III 9. Pectoral $\frac{3}{4}$ to $\frac{5}{6}$ length of head; no scaly process above the axil. Caudal forked, as long as or a little shorter than head. Caudal peduncle as long as deep or a little longer than deep. 30–35 scales in

Fig. 56.



Mugil macrolepis.
Durban. $\frac{2}{5}$.

longitudinal series, 11–12 in transverse series. Greyish brown or olive above, with more or less distinct darker streaks along the series of scales, silvery or golden beneath.

Total length 350 millim.

South and East Africa and Madagascar, eastwards to the South Pacific.

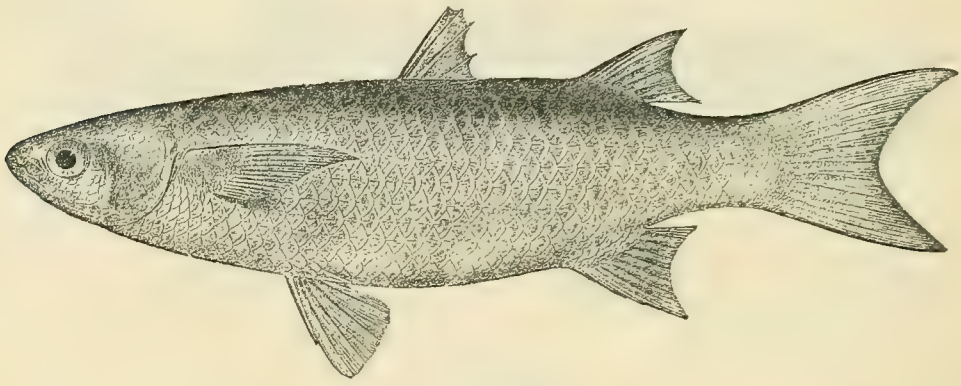
1. Type, stuffed.	Cape of Good Hope.	Sir A. Smith (P.).
2. Hgr.	,,	,,
3. Ad.	Durban.	Mr. T. Ayres (C.).
4. Ad.	Durban Bay, Natal.	Dr. E. Warren (P.).
5. Ad.	Kosi Bay, Zululand.	,,
6. Yg.	Rovuma R.	Dr. Livingstone (C.).
7–10. Hgr. & yg.	Socotra.	Prof. I. B. Balfour (P.).
11. Hgr.	Seychelles.	Sir L. Playfair (P.).
12–17. Types of *M. rodericensis.*	Rodriguez, in fresh water.	G. Gulliver, Esq. (C.).

12. MUGIL HOEFLERI.

Steind. Denkschr. Ak. Wien, xlv. 1882, p. 11, pl. iv. fig. 1; Pellegr. Act. Soc. Linn. Bord. lx. 1905, p. 36.

Depth of body $3\frac{3}{5}$ times in total length, length of head 4 times. Eye nearly as long as snout, about 4 times in length of head; adipose eyelid rudimentary; nostrils close together; mouth forming an obtuse angle; maxillary exposed; lip narrow; a lanceolate space between the rami of the lower jaw; edge of præorbital serrated. Dorsals IV, I 8; first and second spines a little more than $\frac{1}{2}$ length of head, longest soft ray about

Fig. 57.



Mugil hoefleri.
Type, after Steindachner (*l. c.*). $\frac{1}{2}$.

$\frac{2}{3}$ length of head. Anal III 9. Pectoral as long as head; no scaly process above the axil. Caudal deeply emarginate, a little longer than head. Caudal peduncle about $1\frac{1}{2}$ times as long as deep. 34–35 scales in longitudinal series, 12–13 in transverse series. Silvery, with rather indistinct dark streaks along the series of dorsal scales.

Total length 280 millim.

Senegambia.—Types in Vienna Museum.

13. MUGIL GRANDISQUAMIS.

Cuv. & Val. Hist. Poiss. xi. p. 103 (1836); Steind. Sitzb. Ak. Wien, lxi. i. 1870, p. 957.

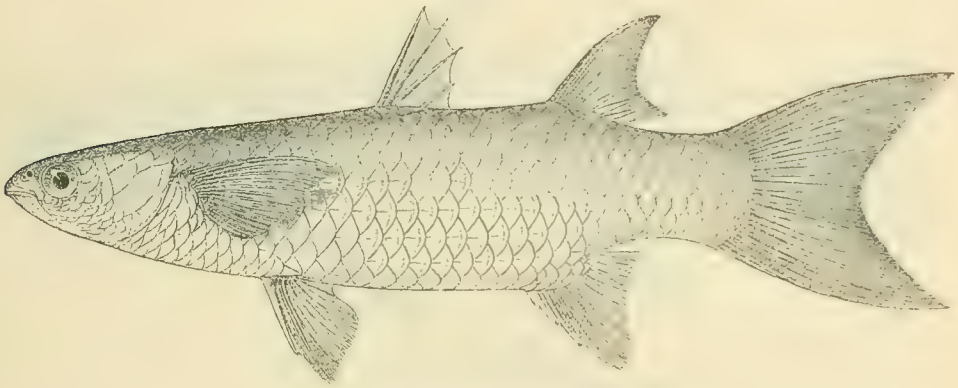
Mugil hypselopterus, Günth. Cat. Fish. iii. p. 450 (1861).

Mugil schlegelii, Bleek. Nat. Verh. Vet. Haarlem, xviii. 1863, no. 2, p. 92, pl. xix. fig. 1.

Depth of body $3\frac{1}{2}$ to 4 times in total length, length of head 4 to $4\frac{1}{2}$

times. Snout as long as eye in adult, shorter in young; eye better visible from below than from above in adult; eye $3\frac{1}{2}$ to $4\frac{1}{3}$ times in length of head, $1\frac{3}{4}$ to $2\frac{1}{2}$ times in interorbital width; a mere rudiment of adipose eyelid; nostrils close together; mouth forming an obtuse angle; maxillary almost entirely hidden when the mouth is closed; upper lip narrow, not $\frac{1}{2}$ diameter of eye; edge of præorbital finely serrated; 4 or 5 series of scales on the cheek; a lanceolate space between rami of lower jaw. Dorsals IV, II 7; first two spines $\frac{2}{3}$ to $\frac{3}{4}$ length of head; longest soft ray $\frac{4}{5}$ to once length of head; second dorsal originating above anterior third of anal. Anal III 9. Pectoral

Fig. 58.



Mugil grandisquamis.
Senegal. $\frac{1}{3}$.

as long as or slightly shorter than head; no scaly process above the axil. Caudal forked, longer than head. Caudal peduncle a little longer than deep. Scales 27–30 in longitudinal series, 9–10 in transverse series. Golden, back greyish brown; second dorsal and caudal edged with blackish.

Total length 380 millim.

Senegal to Niger.—Types in Paris Museum.

1–8. Ad., hgr., & yg.	St. Louis, Senegal.	M. P. Delhez (C.).
9. Type of *M. hypselopterus*.	Niger.	Mr. L. Fraser (C.).

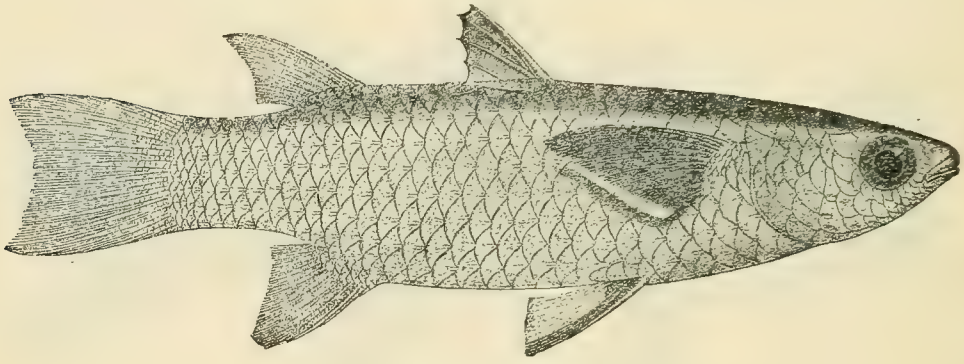
14. MUGIL VAIGIENSIS.

Quoy & Gaim. Voy. Uran. & Physic., Zool. p. 337, pl. lix. fig. 2 (1824); Günth. Cat. Fish. iii. p. 435 (1861); Klunz. Verh. zool.-bot. Ges. Wien, xx. 1870, p. 160; Day, Fish. Ind. p. 359, pl. lxxiii. fig. 4 (1876); Günth. Fische Südsee, p. 216, pl. cxxi. fig. B (1877); Klunz. Fische Roth. Meer. p. 132 (1884).

Mugil macrolepidotus, Rüpp. Atlas Reise N. Afr., Fische, p. 142, pl. xxxv. fig. 2 (1828); Cuv. & Val. Hist. Poiss. xi. p. 134 (1836).
Mugil melanochir, Cuv. & Val. t. c. p. 143.

Depth of body $3\frac{1}{3}$ to 4 times in total length, length of head $3\frac{3}{5}$ to 4 times. Snout as long as eye in adult, shorter in young; eye nearly perfectly lateral, or better visible from below than from above, without adipose lid, 3 (young) to $4\frac{1}{2}$ times in length of head, $1\frac{1}{2}$ to $2\frac{1}{3}$ times in interorbital width; nostrils rather widely separated from each other; mouth forming an obtuse angle; maxillary entirely concealed when the

Fig. 59.



Mugil vaigiensis.
Otahiti, after Günther (Fische Südsee). $\frac{1}{3}$.

mouth is closed; upper lip narrow, not $\frac{1}{2}$ diameter of eye; a lanceolate space between rami of mandible; præorbital with the edge rather strongly denticulated; 3 or 4 series of scales on the cheek. Dorsals IV, I 7–8; first spine longer than second, $\frac{1}{2}$ to $\frac{3}{5}$ length of head, longest soft ray $\frac{2}{3}$ to $\frac{3}{4}$ length of head; second dorsal originating above middle of anal. Anal III 7–8. Pectoral $\frac{3}{4}$ to once length of head; no scaly process above the axil. Caudal feebly emarginate, as long as head. Caudal peduncle as long as deep. 26–27 scales in longitudinal series, 9 in transverse series. Golden, olive on the back, with more or less distinct dark streaks following the series of scales; greater part of pectoral, soft dorsal, and anal black or blackish.

Total length 270 millim.

From the Red Sea to the coast of Natal, eastwards to the South Pacific.

1. Ad., stffd.	Red Sea.	Dr. Rüppell (C.).
2–6. Hgr. & yg.	,,	,, (P.).
7. Ad.	,,	W. Jesse, Esq. (C.).

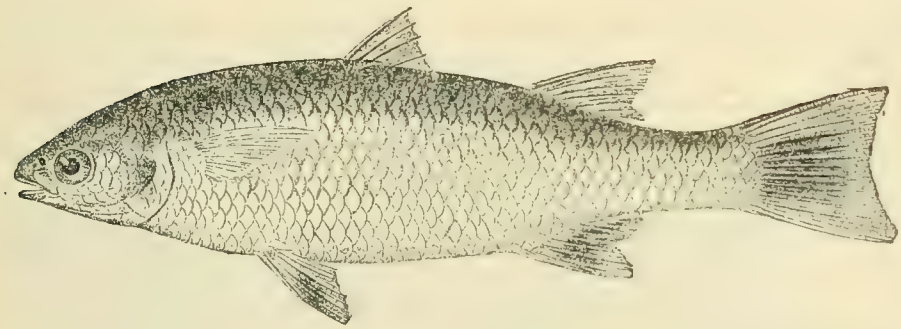
2. AGONOSTOMUS.

Bennett, Proc. Zool. Soc. 1831, p. 166.
Nestis, Cuv. & Val. Hist. Poiss. xi. p. 166 (1836).
Agonostoma, part., Günth. Cat. Fish. iii. p. 461 (1861).

Very closely allied to the preceding, but mouth more normally formed and with several series of small teeth; teeth on the vomer.

Fresh waters of the Mascarene and Comoro Islands.

Fig. 60.



Agonostomus telfairii.
After Cuvier and Valenciennes. $\frac{2}{3}$.

1. AGONOSTOMUS TELFAIRII.

Bennett, l. c.; Peters, Reise Mossamb. iv. p. 18, pl. ii. fig. 2 (1868).
Nestis cyprinoides, Cuv. & Val. t. c. p. 167, pl. cccxvii.
? *Nestis dobuloides*, Cuv. & Val. t. c. p. 171.
Agonostoma telfairii, Günth. t. c. p. 462; Sauv. Hist. Madag., Poiss. p. 403 (1891).
? *Agonostoma dobuloides*, Günth. l. c.; Sauv. op. cit. p. 404, pl. xlii. fig. 5.

Depth of body $3\frac{1}{2}$ to 4 times in total length, length of head 4 to $4\frac{1}{2}$ times. Snout a little longer than eye in adult, a little shorter in young; eye perfectly lateral, $3\frac{1}{2}$ (young) to $4\frac{1}{2}$ times in length of head, $1\frac{1}{3}$ to 2 times in interorbital width; nostrils close together; præoperculum denticulate; mouth extending to below anterior third of eye; maxillary hidden; upper lip rather thick; 3 or 4 series of scales on the cheek. Dorsals IV, II 7; first spine $\frac{1}{2}$ to $\frac{3}{5}$ length of head; second dorsal originating above anterior third of anal. Anal III 9. Pectoral $\frac{3}{4}$ length of head. Caudal truncate or feebly emarginate. Caudal peduncle

nearly twice as long as deep. Scales ctenoid, 40–45 in longitudinal series, 13–14 in transverse series. Silvery, brownish on the back.

Total length 230 millim.

Mauritius, Réunion, and Comoro Islands.

1. Type.	Mauritius.	
2–3. Ad.	Johanna, Comoro Ids.	Sir L. Playfair (P.).
4. Skel.	„ „	„
5–7. Yg.	Anjuan, „	Prof. W. Peters (P.).

Fam. 17. POLYNEMIDÆ.

Mouth protractile, the maxillaries excluded from the oral border; dentition feeble. Two nostrils on each side. Two well-separated dorsal fins, the anterior formed of a small number of spines. Pectoral fin inserted low down, with a lower portion consisting of free rays; the upper portion, or fin proper, attached to the scapula, the lower to a fenestrate bone which appears to be formed by coalesced pterygials. Ventral fins more or less behind the pectorals, with one spine and 5 soft rays; pelvic bones suspended from the postclavicles. Præcaudal vertebræ mostly with strong parapophyses, bearing the ribs and the epipleurals at their extremity. Vertebræ 24. Air-bladder, if present, very large.

The three closely allied marine genera composing this family are represented in Africa by species known to ascend rivers.

1. PENTANEMUS.

Artedi, in Seba, Thesaur. iii. p. 74 (1758); Günth. Cat. Fish. ii. p. 330 (1860); Bouleng. Poiss. Bass. Congo, p. 359 (1901).

Villiform teeth in the jaws, on the vomer, and on the palatines and ectopterygoids. Maxillary much widened behind. Edge of præoperculum entire. Anal fin elongate, much more developed than the soft dorsal.

Tropical Atlantic.

1. PENTANEMUS QUINQUARIUS.

Polynemus quinquarius, Linn. S. N. i. p. 521 (1766); Gill, Proc. Ac. Philad. 1861, p. 278.

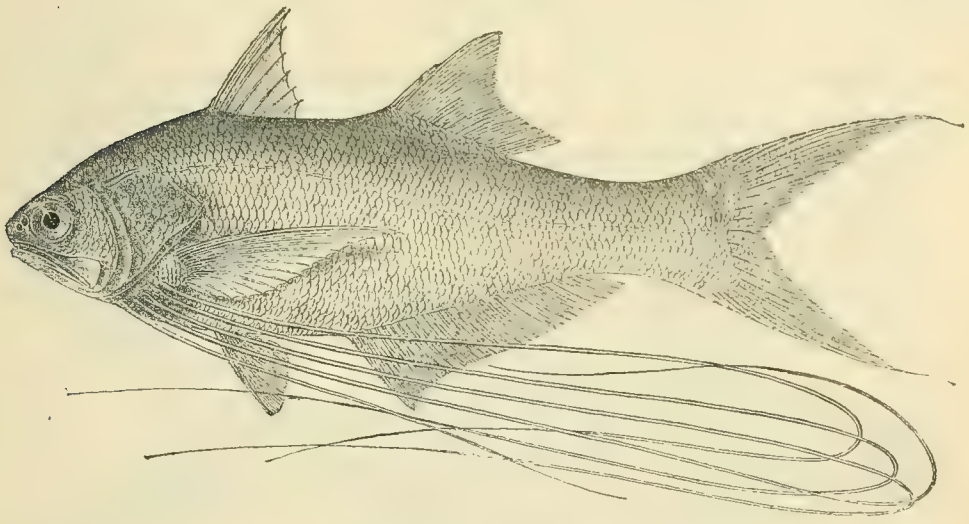
Polynemus artedii, Bennett, Proc. Zool. Soc. 1830, p. 146.

Polynemus macronemus, Pel, Bijdr. Dierk. 1851, p. 9.

Pentanemus quinquarius, Günth. Cat. Fish. ii. p. 331 (1860) ; Bleek. Nat. Verh. Vet. Haarlem, xviii. 1863, no. 2, p. 86 ; Boulenq. Poiss. Bass. Congo, p. 360 (1901).

Depth of body $3\frac{1}{4}$ to $3\frac{1}{2}$ times in total length, length of head nearly 4 times. Snout more or less pointed, projecting beyond mouth, as long as or shorter than eye, which is large and with the border partly hidden under adipose tissue ; mouth large, maxillary extending beyond vertical of posterior border of eye ; rather large scales on the head. Gill-rakers very long and slender, much longer than gill-laminæ, 25 to 30 on lower part of anterior arch. Dorsals VIII, I 14–17 ; spines of first dorsal

Fig. 61.



Pentanemus quinquarius.
W. Africa. $\frac{1}{2}$.

rather feeble, first extremely short, second and third equal and $\frac{2}{3}$ to $\frac{3}{4}$ length of head ; second dorsal pointed and emarginate. Anal II 26–32, twice as long as second dorsal. Pectoral much longer than head ; 5 filaments, extremely long, longest at least twice length of body. Caudal very large, crescentic, the lobes produced into filaments. Scales feebly denticulate, 70–80 $\frac{7-8}{20-22}$. Bluish grey or olive above, silvery white beneath ; fins yellow, sometimes finely dotted, as if produced, with blackish.

Total length 200 millim.

West Coast of Africa and Cuba, sometimes entering rivers.

1. Ad.	Ashantee.	
2. Ad.	Lagos.	J. Cadman, Esq. (P.).
3. Ad.	Niger.	Mr. L. Fraser (C.).
4. Hgr.	Old Calabar.	A. Murray, Esq. (P.).
5. Ad.	Banana, Congo.	
6–10. Ad. & hgr.	W. Africa.	
11. Skel.	,,	

2. POLYNEMUS.

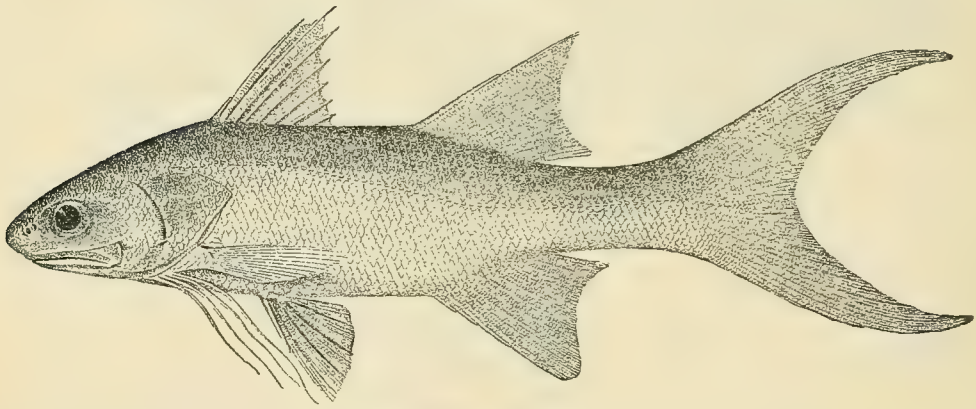
Linn. Syst. Nat. i. p. 521 (1766), part.; Cuv. & Val. Hist. Poiss. iii. p. 362 (1829), part.; Günth. Cat. Fish. ii. p. 319 (1860); Bouleng. Poiss. Bass. Congo, p. 360 (1901).

Trichiodon (Klein), Bleek. Nat. Verh. Vet. Haarlem, xviii. 1863, no. 2, p. 90.

Villiform teeth in the jaws, on the vomer, and on the palatines and ectopterygoids. Maxillary much widened behind. Edge of præoperculum denticulate. Soft dorsal and anal fins of equal size.

Tropical Atlantic, Indian, and Pacific Oceans.

Fig. 62.



Polynemus quadrifilis.
Senegal, after Steindachner (*l. c.*). ½.

1. POLYNEMUS QUADRIFILIS.

Cuv. & Val. t. c. p. 390, pl. lxviii., and vii. p. 518 (1831); Günth. t. c. p. 330; Steind. Sitzb. Ak. Wien, lx. i. 1869, p. 698, pl. x.; Bouleng. op. cit. p. 361.

Trichiodon quadrifilis, Bleek. Nat. Verh. Vet. Haarlem, xviii. 1863, no. 2, p. 88.

Depth of body 4 to 4½ times in total length, length of head 3 to 3½ times. Snout more or less pointed, projecting strongly beyond mouth, as long as or a little shorter than eye, which is large and partly hidden under adipose tissue; mouth large, maxillary extending beyond

vertical of posterior border of eye; rather large scales on the head. Gill-rakers a little longer than gill-laminæ, 13 to 15 on lower part of anterior arch. Dorsals VIII, I 13; first spine extremely short, third longest and $\frac{2}{3}$ to $\frac{3}{4}$ length of head; second dorsal pointed and emarginate, covered with small scales. Anal III 11–12, similar to second dorsal. Pectoral $\frac{2}{3}$ to $\frac{3}{4}$ length of head; 4 filaments, the longest as long as or a little longer than head. Caudal very large, crescentic, covered with small scales. Scales finely denticulate, 70–72 $\frac{5-6}{18}$. Grey or purplish grey above, white beneath; a dark spot on the gill-cover; fins yellow or grey.

Total length 500 millim.

West Coast of Africa, from the Senegal to the Congo.—Type in Paris Museum.

1–3. Ad. & yg.	St. Louis, Senegal.	M. P. Delhez (C.).
4. Skel.	,, ,,	,,
5. Hgr.	Gambia.	J. S. Budgett, Esq. (P.).
6. Skel.	,,	,,
7. Ad.	Niger.	Mr. J. T. Dalton (C.).
8. Ad.	Lokoja, Upper Niger.	J. S. Budgett, Esq. (P.).
9. Hgr.	Munankor, Lower Niger.	Dr. W. J. Ansorge (C.).
10–11. Ad.	Benito R.	G. L. Bates, Esq. (C.).

3. GALEOIDES.

Günth. Cat. Fish. ii. p. 332 (1860); Bouleng. Poiss. Bass. Congo, p. 362 (1901).

Villiform teeth in the jaws and on the palatines. Maxillary not much widened behind. Edge of præoperculum denticulate. Anal fin a little shorter than dorsal.

West Coast of Africa and China.

1. GALEOIDES DECADACTYLUS.

Polynemus decadactylus, Bloch, Nat. Ausl. Fische, ix. p. 26, pl. cccci. (1793); Cuv. & Val. Hist. Poiss. iii. p. 392 (1829).

Polynemus polydactylus, Vahl, Skr. Nat. Selsk. Copenh. iv. H. 2, 1797, p. 164.

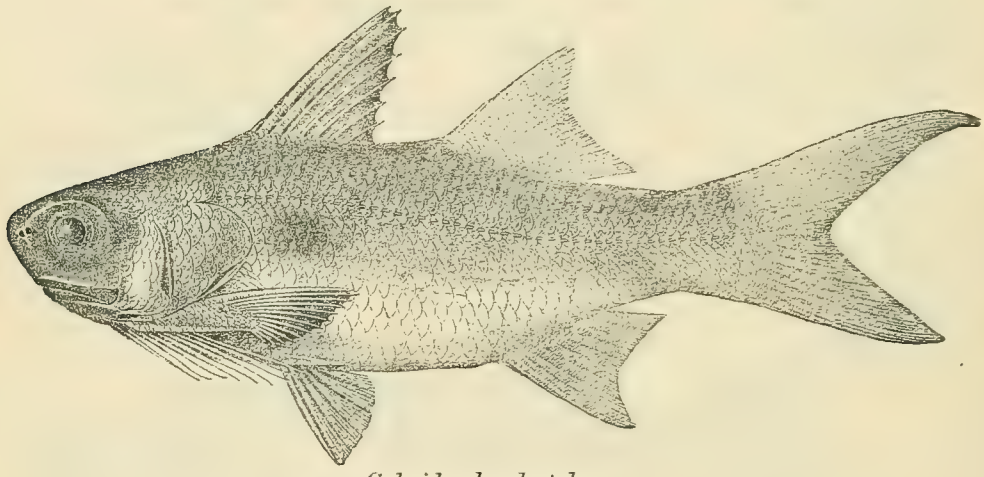
Polynemus enneadactylus, Cuv. & Val. t. c. p. 392, and vii. p. 518 (1831); Trosch. Arch. f. Nat. 1866, p. 204.

Galeoides polydactylus, Günth. l. c.; Steind. Sitzb. Ak. Wien, lx. i. 1869, p. 71, pl. xi., and Notes Leyd. Mus. xvi. 1894, p. 16.

Galeoides decadactylus, Bouleng. l. c.

Depth of body nearly equal to length of head, 3 to $3\frac{1}{2}$ times in total length. Snout very short, much shorter than eye, which is large and partly hidden under adipose tissue; mouth rather small; greater part of head covered with scales. 17 or 18 gill-rakers on lower part of anterior arch. Dorsals VIII, I 13–14; first dorsal with a scaly sheath, first spine extremely short, second and third equal, $\frac{4}{5}$ to $\frac{5}{6}$ length of head; second dorsal pointed and emarginate, covered with small scales. Anal II 11–12, similar to second dorsal, but smaller. Pectoral $\frac{2}{3}$ to $\frac{3}{4}$ length of head; 9 or 10 filaments, shorter than head. Caudal forked, covered with small scales. Scales finely denticulate, sometimes covered

Fig. 63.



Galeoides decadactylus.
Senegal, after Steindachner (*l. c.*). $\frac{1}{3}$.

with others of a minute size, 46–48 $\frac{4-5}{12}$. Greenish grey above, with more or less distinct darker streaks along the series of scales; a round dark spot below the lateral line, above the pectoral fin.

Total length 300 millim.

West Coast of Africa, from the Senegal to the Congo.

1–3. Ak.	Cape Verd Ids.	Rev. R. T. Lowe (P.).
4. Skel.	,,	,,
5–6. Hgr.	St. Jago, Cape Verd.	H.M.S. 'Challenger.'
7. Ad.	Lagos.	J. Cadman, Esq. (P.).
8. Ad.	Niger.	Mr. L. Fraser (C.).
9. Yg.	Old Calabar.	A. Murray, Esq. (P.).
10. Ad.	Boma, Lower Congo.	Capt. Wilwerth (C.).
11. Yg.	Banana, ,,	
12. Ad.	Africa.	

Fam. 18. SPHYRÆNIDÆ.

Mouth protractile, the maxillaries excluded from the oral border; dentition very strong. Two nostrils on each side. Two well-separated dorsal fins, the anterior formed of a small number of spines. Ventral fins more or less behind the pectorals, with one spine and 5 soft rays; pelvis not connected with the pectoral arch. Anterior ribs sessile, the rest inserted on parapophyses. Vertebræ 24. Air-bladder large.

Tropical and Subtropical Seas, often at the mouths of rivers.

1. SPHYRÆNA.

Artedi, Synon. Pisc. p. 112 (1738); Cuv. & Val. Hist. Poiss. iii. p. 325 (1829); Günth. Cat. Fish. ii. p. 334 (1860); Bouleng. Poiss. Bass. Congo, p. 364 (1901).

Body elongate, feebly compressed, covered with small cycloid scales; lateral line complete, formed of straight tubules. Head elongate; mouth large. Two large teeth in front of the præmaxillary, the edge of which is beset with a single series of small teeth; a series of large palatine teeth; the largest mandibular teeth in front, followed by first small and then large teeth, in a single series. Anterior dorsal fin with 5 slender spines, above the ventrals; second dorsal and anal opposite to each other, without pungent spine.

Mediterranean and Tropical and Subtropical Seas; one species entering the rivers of West Africa.

1. SPHYRÆNA GUACHANCHO.

Cuv. & Val. t. c. p. 342; Poey, Mem. Cuba, ii. p. 166 (1860); Meek & Newl. Proc. Ac. Philad. 1884, p. 70; Jord. & Everm. Fish. N. Amer. p. 824 (1896); Bouleng. Poiss. Bass. Congo, p. 364 (1901).

Sphyræna afra, Peters, Mon. Berl. Ac. 1844, p. 82, and 1876, p. 812.

Sphyræna dubia, Bleek. Nat. Verh. Vet. Haarlem, xviii. 1863, no. 2, p. 70, pl. xv. fig. 2; Steind. Notes Leyd. Mus. xvi. 1894, p. 32.

Sphyræna guentheri, Haly, Ann. & Mag. N. H. (4) xv. 1875, p. 270.

Sphyræna jello (non Cuv. & Val.), Steind. Denkschr. Ak. Wien, xliv. 1882, p. 39.

Depth of body 7 to $7\frac{1}{2}$ times in total length, length of head 3 to $3\frac{1}{2}$ times. Eye perfectly lateral, $2\frac{1}{2}$ to 3 times in length of snout, $5\frac{1}{3}$ to $6\frac{1}{2}$ times in length of head, 1 to $1\frac{2}{3}$ times in interorbital width; maxillary extending to below anterior border of eye; chin without

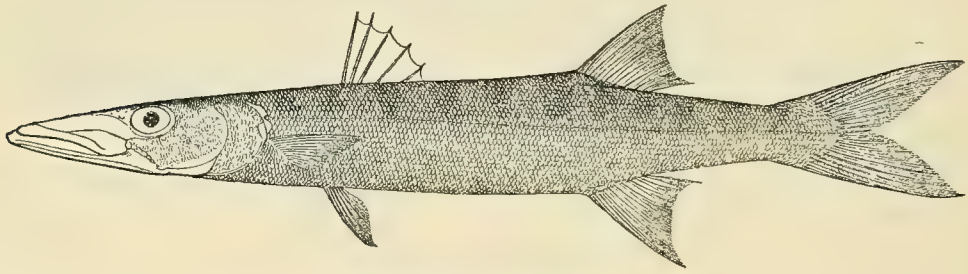
fleshy appendage, projecting beyond snout; cheek covered with very small scales; larger scales on the operculum, which ends in a single point. Dorsals V, I 9; first and second spines equal, or second longer, about $\frac{1}{3}$ length of head. Anal I 8. Pectoral $\frac{2}{5}$ to $\frac{3}{7}$ length of head. Ventral nearer eye than origin of anal. Caudal forked, about $\frac{2}{3}$ length of head. Caudal peduncle 3 times as long as deep. Scales 110–130 $\frac{13-15}{20-22}$. Olive above, yellowish on the sides, white beneath; numerous transverse dark bars on the back.

Total length 700 millim.

Tropical Atlantic, entering rivers from the Senegal to the Congo.

1. Ad.	St. Louis, Senegal.	M. P. Delhez (C.).
2–3. Hgr. & yg.	Gambia.	J. S. Budgett, Esq. (P.).
4. Hgr.	Lagos.	J. Cadman, Esq. (P.).
5–7. Yg.	Degama, Lower Niger.	Dr. W. J. Ansorge (C.).
8. Skel.	,, ,,	,,
9. Yg.	Benito R.	G. L. Bates, Esq. (C.).

Fig. 64.



Sphyræna guachancho.
Gambia. $\frac{1}{3}$.

Fam. 19. GASTROSTEIDÆ.

Mouth protractile, the maxillaries excluded from the oral border. Suborbital bones in contact with præoperculum, protecting the cheek. Only three branchiostegal rays. Two nostrils on each side. Body naked or protected by bony shields, tapering to a slender caudal peduncle. Spinous dorsal fin represented by isolated spines. Pectoral fins with short pterygials, coracoid bones large, forming a ventral armour. Ventral fins with one spine and one or two soft rays, well behind the pectorals, and usually connected with the scapular arch. Præcaudal vertebræ with strong transverse processes.

Fresh waters and Coasts of the Northern Hemisphere.

1. GASTROSTEUS.

Linn. Syst. Nat. i. p. 489 (1766), part. ; Cuv. & Val. Hist. Poiss. iv. p. 479 (1829) ; Günth. Cat. Fish. i. p. 2 (1859), part.

Body moderately elongate. Snout short, not tubiform. Villiform teeth in jaws, none on palate. Dorsal fin with 3 to 11 spines, soft part similar to anal. Pelvic bones united to form a triangular or lanceolate plate between the ventral fins. Vertebræ 29–33.

A single species in Africa.

1. GASTROSTEUS ACULEATUS.

Linn. S. N. i. p. 489 (1766).

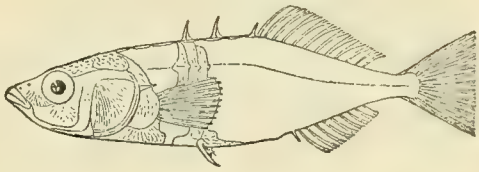
This species, widely distributed in the seas and fresh waters of the cold and temperate parts of the Northern Hemisphere, is represented in the fresh waters of Algeria by the following form, which may be designated as var. *algeriensis*:—

Gasterosteus leiurus (non C. & V.), Gerv. Zool. Pal. Gén. p. 202, pl. xlv. fig. 1 (1869).

Gasterosteus brachycentrus (non C. & V.), Playf. & Letourn. Ann. & Mag. N. H. (4) viii. 1871, p. 388.

Gasterosteus algeriensis, Sauv. N. Arch. Mus. x. 1874, p. 17 ; Regan, Ann. & Mag. N. H. (8) iv. 1909, p. 437.

Fig. 65.



Gastrosteus aculeatus, var. *algeriensis*. ×1⅓.

Depth of body 3½ to 4 times in total length, length of head 3¼ to 3½ times. Snout as long as or a little shorter than eye, which is 3 to 3⅓ times in length of head. D. I, I, I 11–12 (rarely I, I, I, I 12); spines rather narrow and feebly denticulated at the sides, first and second equal or second the longer, usually measuring less than diameter of eye, first behind vertical of base of pectoral. Anal I 8–9. Ventral spine ½ to ¾ length of pelvic plate. 1–4 bony plates above the ascending process of the pelvis, body sometimes entirely naked; no lateral keel on the caudal peduncle.

Total length 50 millim.

Metidja, near Algiers.

1–36. Ad., hgr., & yg. Ditches in the Metidja. Sir L. Playfair (P.).

Fam. 20. BLENNIIDÆ.

Mouth more or less protractile, often bordered to a considerable extent by the maxillaries. Lower pharyngeal bones separate. Two nostrils on each side. Suborbitals often forming a more or less distinct subocular shelf. Gill-membranes usually attached to isthmus. Scapula and coracoid more or less developed, sometimes much reduced, the former pierced by a foramen; 4 or 5 hourglass-shaped pterygials, one or two of which are in contact with the coracoid. Ventral fins, if present, jugular, with not more than 4 rays. Dorsal and anal fins elongate, the former constituted entirely of spines, or anteriorly of spines or non-articulated rays, and posteriorly of soft rays. Body naked or with small scales. Most of the præcaudal vertebræ with strong transverse processes supporting the ribs.

Cosmopolitan. Mostly marine.

Two genera have representatives in the fresh waters of Africa:—

All the teeth immovable	1. *Blennius*, L., p. 108.
Movable teeth implanted in the gum	2. *Salarias*, Cuv., p. 110.

1. BLENNIUS.

Linn. Syst. Nat. i. p. 441 (1766), part.; Cuv. & Val. Hist. Poiss. xi. p. 197 (1836); Günth. Cat. Fish. iii. p. 211 (1861).

Ichthyocoris, Bonap. Icon. Faun. Ital., Pesci (1840).

A series of immovable teeth in the jaws, often with one or two curved canines on each side; palate toothless. Gill-openings wide, gill-membrane extending across the throat. Dorsal fin elongate, all the rays simple, flexible, or the last branched; anal similar to dorsal, but shorter. Ventral fins with a small spine and 2 or 3 rays. Body naked.

Coasts of the Northern Hemisphere, Brazil, and the South Pacific. Fresh waters of the Mediterranean basin. One species in Algeria.

1. BLENNIUS FRATER.

Blennius, Asso y del Rio, Introd. Oryctogr. et Zool. Aragon. p. 95, pl. vi. fig. 2 (1784).

Blennius frater, Bloch, Schneid. Syst. Ichthyol. p. 171 (1801); Cuv. & Val. Hist. Poiss. xi. p. 252 (1836).

Blennius sujefianus (non Lacep.), Risso, Ichthyol. Nice, p. 131 (1810); Blanch. Poiss. France, p. 255, fig. (1866).

Blennius vulgaris, Pollini, Viagg. L. di Garda, p. 20, pl. —. fig. 1 (1816); Martens, Arch. f. Naturg. xxiii. 1857, p. 172, pl. ix. fig. 3; Günth. Cat. Fish. iii. p. 217 (1861); Steind. Sitzb. Ak. Wien, lvii. i. 1868, p. 670, pl. i. figs. 1 & 2; Playf. & Letourn. Ann. & Mag. N. H. (4) viii. 1871, p. 386; Canestr. Fauna d'Ital., Pesci, p. 28 (1874); Lortet, Arch. Mus. Lyon, iii. 1883, p. 130, pl. xviii. fig. 4; Tristr. Faun. Palest. p. 162 (1884).

Salarias varus, Risso, Hist. Nat. Eur. Mér. iii. p. 237 (1826).

Blennius cagnota, Cuv. & Val. t. c. p. 249; Heck. & Kner, Süsswasserf. Oesterr. p. 14, fig. (1858); Moreau, Poiss. France, ii. p. 116 (1881); Fatio, Vert. Suisse, iv. p. 151 (1882).

Blennius varus, Bonap. Icon. Faun. Ital., Pesci (1840); Günth. t. c. p. 220; Gerv. Zool. Pal. Génér. p. 203, pl. xliv. fig. 5 (1869); Lortet, t. c. p. 129, pl. xvii. fig. 3; Tristr. l. c.

Blennius anticolus, Bonap. l. c.

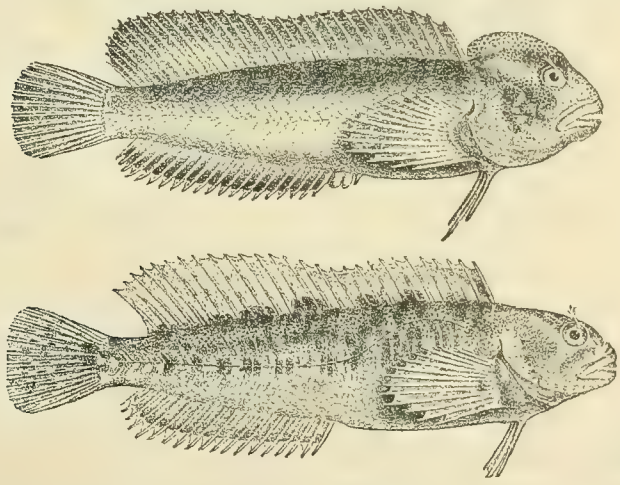
Blennius lupulus, Bonap. l. c.; Günth. t. c. p. 225, and Proc. Zool. Soc. 1864, p. 490; Lortet, t. c. p. 130; Tristr. l. c. pl. xix. fig. 3.

Ichthyocoris varus, Bonap. Cat. Meth. Pesc. Eur. p. 67 (1846); Gerv. Rev. et Mag. Zool. ii. 1859, p. 347.

Ichthyocoris pollinii, Bonap. op. cit. p. 68.

Blennius alpestris, Blanch. op. cit. p. 261, fig.; Lunel, Rev. et Mag. Zool. xxii. 1870, p. 3.

Fig. 66.



Blennius frater.

♂ ♀, Spain, after Steindacher (*l. c.*).

Body strongly compressed, its depth equal to length of head, 4 to $4\frac{1}{3}$ times in total length. Head with strongly curved upper profile, $1\frac{2}{3}$ to 2 times as long as broad, the breeding male with a strong upper crest;

snout about $\frac{1}{2}$ length of postocular part of head; diameter of eye 4 to 6 times in length of head, equal to or greater than interorbital width; a more or less developed tentacle above the eye; mouth extending to below anterior third or centre of eye; 16 to 28 obtuse teeth in upper jaw, 12 to 22 in lower, followed on each side by one or two curved canines. Dorsal 26–32, originating above gill-opening, very feebly notched in the middle. Anal 17–22. Dorsal and anal of male in contact with caudal, or narrowly separated. Pectoral as long as or a little longer than head. Ventral with 3 rays. Caudal rounded. Lateral line strongly curved in front, straight from above vent. Olive-brown or reddish brown, uniform or with darker and lighter blotches or irregular cross-bands.

Total length 120 millim.

S. France, Spain, Italy, Sardinia, and Sicily, Dalmatia, Cyprus, Syria, Algeria.

1. Ad.	Algeria.	Sir L. Playfair (P.).
2. Ad.	L. Bourget, Savoy.	T. H. Powell, Esq. (P.).
3–6. Hgr.	L. Garda.	Dr. F. Werner (P.).
7–16. Hgr.	„	Prof. E. v. Martens (P.).
17–26. Ad., hgr, & yg.	L. di Nemi.	„
27. Hgr.	L. Albano.	„
28. Hgr.	L. Bracciano, near Rome.	W. C. Trevelyan, Esq. (P.).
29. Ad.	R. Coghinas, N. Sardinia.	M. P. Dehaut (P.).
30–31. Ad.	Dalmatia.	
32–33. Ad.	Cyprus.	R. L. N. Michell, Esq. (P.).
34. Skel.	„	„
35–36. Ad.	L. Galilee.	T. W. Beddome, Esq. (P.).

2. SALARIAS.

Cuv. Règne Anim. ii. p. 251 (1817); Cuv. & Val. Hist. Poiss. xi. p. 301 (1836); Günth. Cat. Fish. iii. p. 239 (1861).

Alticus (Commers.), Bleek. Versl. Ak. Amsterd. (2) iii. 1869, p. 235.

A series of numerous small teeth in the jaws, implanted in the gum and movable; usually a curved canine tooth on each side of the lower jaw, behind the series of small teeth; palate toothless. Gill-openings wide. Dorsal fin elongate, continuous, the simple rays slender, flexible; anal elongate. Ventral fins with a small hidden spine and 2 to 4 rays. Body naked.

Tropical and Subtropical Seas, a few species in fresh waters. The latter have one representative in Madagascar and the Mascarene Islands.

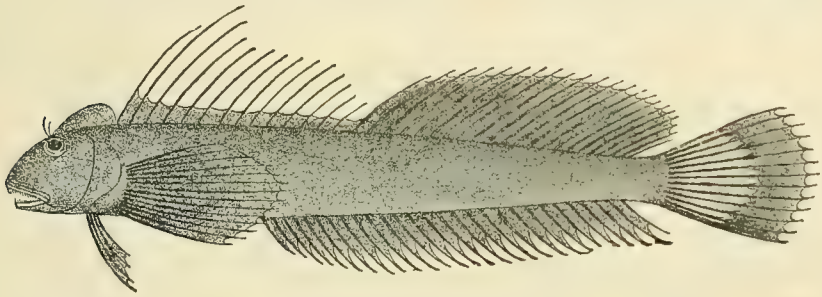
1. SALARIAS MONOCHROUS.

Alticus monochrous, Bleek. Versl. Ak. Amsterd. (2) iii. 1869, p. 234, and Poiss. Madag. p. 60, pl. xvi. fig. 2 (1874); Sauv. Hist. Madag., Poiss. p. 391, pl. xxxix. figs. 1 & 2 (1891).

Alticus aspilus, Bleek. ll. cc. p. 235, and p. 61, pl. xvi. fig. 1.

Body compressed, its depth 8 to $8\frac{1}{2}$ times in total length; head $5\frac{1}{2}$ to 6 times in total length. A dermal crest on the head in the adult male; eye 4 to 5 times in length of head; a bifid tentacle above the eye; canine teeth present in male. Dorsal XIV 22, originating on occiput, simple rays more or less produced into filaments, the anterior at least

Fig. 67.



Salarias monochrous.
♂, after Bleeker (Poiss. Madag.).

as long as head. Anal 24–26. Pectoral much longer than head. Ventral with 4 rays. Caudal rounded. Caudal peduncle deeper than long. Dark purplish brown, uniform or with black cross-bars.

Total length 110 millim.

Sambirano R., Madagascar; Réunion.—Type in Leyden Museum.

The occurrence of the Mediterranean Blenniid *Cristiceps argentatus*, Risso, in one of the "rigoles d'écoulement" of the Fontaine Malakoff, an artesian well between Algiers and Laghouat, reported by Playfair and Letourneux, Ann. & Mag. N. H. (4) viii. 1871, p. 386, on the authority of a M. Fanton, of Algiers, cannot be admitted until confirmed. The specimen described by the above authors is not preserved in the Museum.

Suborder IX. OPISTHOMI.

Air-bladder without open duct. Operculum well developed, hidden under the skin; supraoccipital separating the parietals, in contact with the frontal. Pectoral arch suspended from the vertebral column, far behind the skull; no mesocoracoid. Dorsal and anal fins with spines, ventrals absent.

Fam. 1. MASTACEMBELIDÆ.

Body more or less eel-shaped; a series of short spines detached from the very elongate dorsal fin. Scales very small. Anterior nostril widely separated from the posterior, and opening in a tentacle on each side of a dermal rostral appendage. Mouth not protractile, bordered by the præmaxillaries, to the upper border of which the maxillaries are attached. Gill-opening inferior; gills 4; branchiostegal rays 6; no pseudobranchiæ. Vertebræ numerous (72–95), the præcaudals with transverse processes bearing the ribs.

Fresh and brackish waters of Southern Asia and Tropical Africa. A single genus in Africa.

1. MASTACEMBELUS.

Gronov. Zoophyl. p. 133 (1781), part.; Günth. Cat. Fish. iii. p. 540 (1861); Bouleng. Poiss. Bass. Congo, p. 490 (1901), Fish. Nile, p. 540 (1907), and Journ. Ac. Philad. (2) xv. 1912, p. 197.

Rostral appendage not striated inferiorly. Dorsal with 7 to 39 spines, anal with 1 to 3.

South-eastern Asia, China, Euphrates, Oxus, and Tropical Africa.

In all the African species the caudal fin is confluent with the dorsal and anal.

Synopsis of the Species.

I. Vent equally or nearly equally distant from end of snout and from caudal fin.

A. Less than 20 dorsal spines; no præorbital or præopercular spines.

D. VII 105; A. III 70; length of head * $5\frac{1}{4}$ times in total length . . . . . 1. *M. paucispinis*, Blgr., p. 115.

D. XVIII 85; A. II 90; length of head $8\frac{2}{3}$ times in total length . . . . . 2. *M. frenatus*, Blgr., p. 116.

* The head is measured to the gill-opening, and the rostral appendage is not included.

B. 23 or 24 dorsal spines ; præopercular spines present.

D. XXIII–XXIV 75 ; A. II 75–80 ; a præorbital spine ; length of head twice in its distance from vent . . . . . 3. *M. marchii*, Sauv., p. 116.

D. XXIV 100 ; A. II 100 ; no præorbital spine; length of head $3\frac{1}{2}$ times in its distance from vent . . . . . 4. *M. cryptacanthus*, Gthr., p. 117.

C. 25 to 34 dorsal spines ; præopercular spines present.

1. Two anal spines.

a. A strong præorbital spine; length of head $2\frac{1}{4}$ to $2\frac{3}{4}$ times in its distance from vent.

D. XXVI–XXVII 85–90 ; A. II 80–90 . . 5. *M. sclateri*, Blgr., p. 118.

D. XXVII–XXIX 95–105 ; A. II 115–125 . 6. *M. cunningtoni*, Blgr., p. 119.

b. A small præorbital spine ; length of head $2\frac{2}{3}$ to $3\frac{1}{2}$ times in its distance from vent.

D. XXVI–XXX 80 ; A. II 80 ; depth of body 12 to 13 times in total length . . 7. *M. liberiensis*, Blgr., p. 119.

D. XXVIII–XXXII 100–130 ; A. II 100–130 ; depth of body 13–17 times in total length . . . . . 8. *M. loennbergii*, Blgr., p. 120.

c. No præorbital spine ; length of head 3 to $4\frac{1}{2}$ times in its distance from vent.

D. XXIX–XXXII 80–85 ; A. II 80–85 . . 9. *M. goro*, Blgr., p. 121.

D. XXXIV 128 ; A. II 120 . . . . . 10. *M. ansorgii*, Blgr., p. 122.

3. Three anal spines ; a strong præorbital spine.

D. XXV–XXVIII 85–90 ; A. III 85–92 . . 11. *M. congicus*, Blgr., p. 123.

D. XXIX 85 ; A. III 85 . . . . . 12. *M. signatus*, Blgr., p. 124.

D. 25 to 35 dorsal spines ; no præorbital or præopercular spines.

1. Head $\frac{4}{5}$ to $1\frac{1}{2}$ times as long as its distance from first dorsal spine.

D XXVII 80–90 ; A. II 68–80 ; no lateral line . . . . . 13. *M. niger*, Sauv., p. 125.

D XXV–XXVIII 70–80 ; A. II 80–90 ; lateral line formed of a few tubules widely separated from one another . . . . . 14. *M. flavomarginatus*, Blgr., [p. 125.

D. XXX–XXXIII 80–90 ; A. II 80–90 ; lateral line formed of a few tubules widely separated from one another . . . . . 15. *M. batesii*, Blgr., p. 126.

2. Head 2 to 3 times as long as its distance from first dorsal spine.

a. 25–29 dorsal spines.

D. XXV–XXVII 70–80 ; A. II 70–80 ; mouth extending to below centre of eye ; 30–35 scales between origin of soft dorsal and lateral line . . . . . 16. *M. moorii*, Blgr., p. 127.

D. XXVI–XXIX 65–70; A. II 68–75; mouth extending to below anterior border of eye; 18–22 scales between origin of soft dorsal and lateral line . . . . . 17. *M. shiranus*, Gthr., p. 128.

D. XXVII–XXIX 95–100; A. II 85–90; mouth extending to below anterior border or anterior third of eye; 23–25 scales between origin of soft dorsal and lateral line . . . . . 18. *M. nigromarginatus*, Blgr., [p. 129.

b. 30–35 dorsal spines.

D. XXX 75; A. II 75; mouth extending to below anterior border of eye; 18 scales between origin of soft dorsal and lateral line . . . . . 19. *M. moeruensis*, Blgr., p. 130.

D. XXXII–XXXV 100; A. II 100; mouth extending to below posterior nostril; about 20 scales between origin of soft dorsal and lateral line . . . . . 20. *M. victoriæ*, Blgr., p. 131.

II. Vent considerably nearer caudal fin than end of snout.

A. 29 to 32 (rarely 33) dorsal spines.

1. Two anal spines.

a. Præorbital and præopercular spines present.

D. XXIX–XXX 110; A. II 110; mouth extending to below anterior border of eye . 21. *M. ubangensis*, Blgr., p. 132.

D. XXXI 70; A. II 70; mouth not extending to below posterior nostril . . . . . 22. *M. ellipsifer*, Blgr., p. 132.

b. No præorbital spine; præopercular spines present.

D. XXX–XXXII 85; A. II 70; mouth extending to below posterior border of eye; depth of body nearly 20 times in total length . . . . . 23. *M. marmoratus*, Perugia, [p. 133.

D. XXIX–XXXII 70–80; A. II 70–80; mouth extending to below eye; depth of body 13–14 times in total length . . . 24. *M. brevicauda*, Blgr., p. 133.

D. XXXI–XXXII 90; A. II 90–95; mouth extending to below posterior nostril; depth of body 11 to 12 times in total length . 25. *M. reticulatus*, Blgr., p. 134.

c. No præorbital or præopercular spines.

D. XXXII 70; A. II 75 . . . . . 26. *M. mellandi*, Blgr., p. 135.

2. Three anal spines.

D. XXXI 51; A. III 53; no præorbital or præopercular spines . . . . . 27. *M. brachyrhinus*, Blgr., p. 136.

D. XXXII–XXXIII 80–83; A. III 85–88;
no præorbital or præopercular spines . . 28. *M. stappersii*, Blgr., p. 137.
D. XXXI 95; A. III 70; præopercular spines
present . . . . . 29. *M. trispinosus*, Stdr., p. 137.

B. 33 to 39 dorsal spines; no præorbital spine.
D. XXXIII–XXXV 85; A. II 85; no præ-
opercular spine . . . . . 30. *M. tæniatus*, Blgr., p. 138.
D. XXXVI–XXXIX 50–60; A. II 50–60;
one præopercular spine . . . . . 31. *M. tanganicæ*, Gthr., p. 138.

III. Vent considerably nearer end of snout than caudal fin.
D. XXV–XXVIII 125–150; A. II 125–150;
no præorbital spine; two præopercular
spines . . . . . 32. *M. longicauda*, Blgr., p. 139.
D. XXXI 150; A. II 150; a præorbital and
4 præopercular spines . . . . . 33. *M. greshoffi*, Blgr., p. 140.
D. XXX–XXXIII 100–120; A. I 115–130;
no præorbital or præopercular spines . . 34. *M. ophidium*, Gthr., p. 141.

Fig. 68.

Mastacembelus paucispinis.
Type (A. M. C.). $\frac{1}{2}$.

1. MASTACEMBELUS PAUCISPINIS.

Boulenger. Ann. Mus. Congo, Zool. i. p. 55, pl. xxviii. fig. 3 (1899), and Poiss. Bass. Congo, p. 492, pl. xxiv. fig. 1 (1901).

Depth of body 10 times in total length, length of head $5\frac{1}{4}$ times. Vent slightly nearer end of snout than caudal, its distance from head $1\frac{1}{2}$ times length of latter. Snout 4 times as long as eye, ending in an appendage which is a little longer than eye; mouth not extending quite to below anterior border of eye; no præorbital or præopercular spines. Dorsal VII 105; spines extremely short; distance between first spine and head nearly $\frac{1}{6}$ length of latter. Anal III 70; second spine longest. Caudal rounded. Pectoral a little more than $\frac{1}{4}$ length of head. Scales

extremely small, about 30 between origin of soft dorsal and lateral line. Brownish, with darker spots on the pectoral and anal fins.

Total length 22 millim.

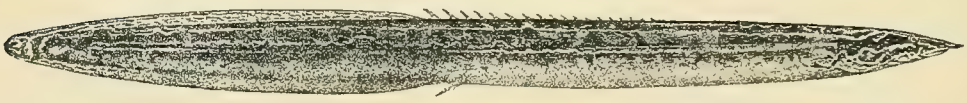
Lower Congo (Matadi).—Type in Congo Museum, Tervueren.

2. MASTACEMBELUS FRENATUS.

Bouleng. Ann. & Mag. N. H. (7) vii. 1901, p. 5, Poiss. Bass. Congo, p. 493 (1901), and Tr. Zool. Soc. xvi. 1901, p. 159, pl. xx. fig. 3, and xvii. 1906, p. 576.

Depth of body 13 times in total length, length of head $8\frac{2}{3}$ times. Vent nearly equally distant from snout and from caudal, its distance from head $3\frac{2}{3}$ times length of latter. Snout 3 times as long as eye, ending in an appendage which is a little longer than eye; mouth

Fig. 69.



Mastacembelus frenatus.
Type (Tr. Z. S. 1901). $\frac{1}{2}$.

extending to below anterior border of eye; no præorbital or præopercular spines. Dorsal XVIII 85; spines increasing in length, last nearly twice as long as eye; distance between first spine and head $1\frac{1}{2}$ length of latter. Anal II 90. Caudal rounded. Pectoral $\frac{2}{7}$ length of head. Scales very small, 22 between origin of soft dorsal and lateral line. Yellowish brown above, marbled with darker, yellowish beneath; a dark brown streak on each side of the head, passing through the eye; two brown bars across the caudal fin.

Total length 250 millim.

Lake Tanganyika.

1. Type.	N. end of L. Tanganyika.	Prof. J. E. S. Moore (C.).

3. MASTACEMBELUS MARCHII.

Sauv. Bull. Soc. Philom. (7) iii. 1878, p. 94, and N. Arch. Mus. (2) iii. 1880, p. 36, pl. i. fig. 1; Bouleng. Poiss. Bass. Congo, p. 495 (1901).

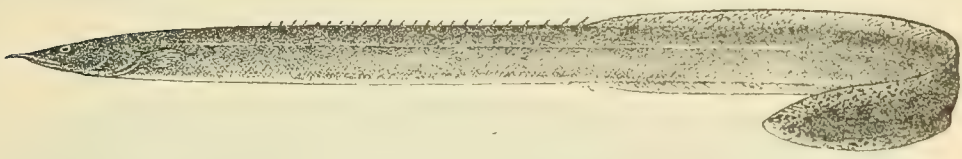
Depth of body 10 to 12 times in total length, length of head $5\frac{1}{2}$ times. Vent equally distant from end of snout and from caudal fin, its distance

from head about twice length of latter. Snout 3 times as long as eye, ending in an appendage which is more than twice as long as eye; mouth not extending to below eye; a strong, erectile spine below posterior nostril; two strong præopercular spines. Dorsal XXIII-XXIV 75; distance between first spine and head $\frac{1}{4}$ length of latter. Anal II 75–80. Caudal obtusely pointed. Pectoral $\frac{1}{3}$ length of head. Scales very small, 20–22 between origin of soft dorsal and lateral line. Brownish, spotted and marbled with yellowish; a series of black spots along the middle of the back and at the base of the anal fin; soft dorsal spotted with black; anal edged with black.

Total length 150 millim.

Ogowe.—Type, in Paris Museum, examined.

Fig. 70.



Mastacembelus cryptacanthus.
Type. $\frac{2}{3}$.

4. MASTACEMBELUS CRYPTACANTHUS.

Günth. Proc. Zool. Soc. 1867, p. 102; Bouleng. Tr. Zool. Soc. xv. 1898, p. 23.

Depth of body 22 times in total length, length of head 10 times. Vent slightly nearer end of snout than caudal, its distance from head $3\frac{1}{2}$ times length of latter. Snout 3 times as long as eye, ending in an appendage which is $1\frac{1}{2}$ times as long as eye; mouth extending to below anterior border of eye; no præorbital spine; two strong præopercular spines. Dorsal XXIV 100; spines short, last longest, as long as eye; distance between first spine and head a little longer than latter. Anal II 100. Caudal obtusely pointed. Pectoral $\frac{1}{4}$ length of head. Scales very small, 16 between origin of soft dorsal and lateral line. Brown, variegated with darker; dorsal, anal, and caudal finely dotted with blackish.

Total length 230 millim.

Cameroon.

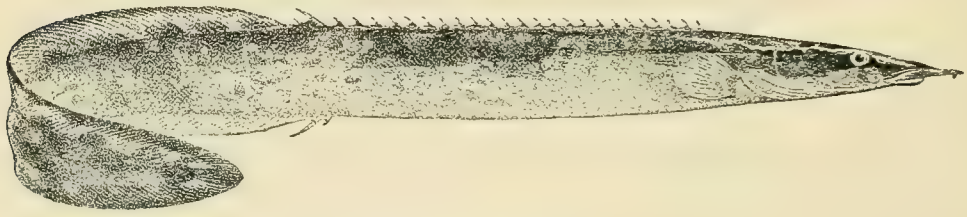
1. Type. Cameroon. Dr. J. A. Smith (P.).

5. MASTACEMBELUS SCLATERI.

Bouleng. Proc. Zool. Soc. 1903, i. p. 28, pl. v. fig. 2.

Depth of body 11 to 13 times in total length, length of head 6 to 7 times. Vent equally or nearly equally distant from end of snout and from caudal, its distance from head $2\frac{1}{4}$ to $2\frac{3}{4}$ times length of latter. Snout 3 times as long as eye, ending in an appendage which is about $1\frac{1}{2}$ times as long as eye; mouth extending hardly to below posterior nostril; a strong erectile spine below the latter; two strong præopercular spines. Dorsal XXVI–XXVII 85–90; spines short, last longest and nearly twice as long as eye; distance between first spine and head $\frac{1}{4}$ to $\frac{2}{7}$ length of latter. Anal II 80–90. Caudal obtusely pointed. Pectoral not quite $\frac{1}{3}$ length of head. Scales very small, 19 to 21 between origin of soft dorsal and lateral line. Olive-brown, whitish on the belly; a dark band on each side of the head, passing through

Fig. 71.



Mastacembelus sclateri.
Type (P. Z. S. 1903). $\frac{5}{7}$.

the eye, sometimes continued on the anterior part of the body; a series of square or X-shaped dark spots may be present on each side, on the lateral line; a more or less distinct series of dark light-edged ocelli along the base of the dorsal; posterior part of dorsal and anal, and caudal black-edged.

Total length 300 millim.

South Cameroon.

1–4. Types.	Near Efulen.	G. L. Bates, Esq. (C.).
5–6. Hgr.	,,	,,
7. Hgr.	Ja R. at Bitye.	,,
8. Ad.	Esamesa.	,,
9. Skel.	,,	,,

6. MASTACEMBELUS CUNNINGTONI.

Bouleng. Tr. Zool. Soc. xvii. 1906, p. 575, pl. xli. fig. 3 ; Steind. Anz. Ak. Wien, 1909, p. 388.

Depth of body $9\frac{1}{2}$ to 11 times in total length, length of head $6\frac{1}{5}$ to $7\frac{1}{2}$ times. Vent nearly equally distant from end of snout and from caudal, its distance from head $2\frac{1}{2}$ to $2\frac{3}{4}$ times length of latter. Snout 3 to 4 times as long as eye, ending in an appendage which is a little longer than latter; mouth extending to below posterior nostril or not quite so far; a strong erectile spine below posterior nostril; two strong præopercular spines. Dorsal XXVII–XXIX 95–105; spines increasing in length, last $1\frac{1}{2}$ times as long as eye; distance between first spine and head $\frac{1}{4}$ to $\frac{2}{7}$ length of latter. Anal II 115–125. Caudal pointed. Pectoral $\frac{1}{3}$ to $\frac{2}{5}$ length of head. Scales very small, 26–28 between origin of soft dorsal and lateral line. Uniform brown above, or olive-

Fig. 72.

Mastacembelus cunningtoni.
Type (Tr. Z. S. 1906). $\frac{1}{2}$.

brown mottled with darker, white beneath; pectoral, dorsal, and anal fins brown, with a light edge; caudal blackish, edged with orange.

Total length 680 millim.

Lake Tanganyika.

1–2. Types.	Kituta.	Dr. W. A Cunnington (C.).
3. Type.	Kazzaga.	,,
4. Ad.	Kilewa Bay.	Dr. L. Stappers (C.).

7. MASTACEMBELUS LIBERIENSIS.

Mastacembelus marchei (non Sauv.), Steind. Notes Leyd. Mus. xvi. 1894, p. 31.
Mastacembelus liberiensis, Bouleng. Tr. Zool. Soc. xv. 1898, p. 23.

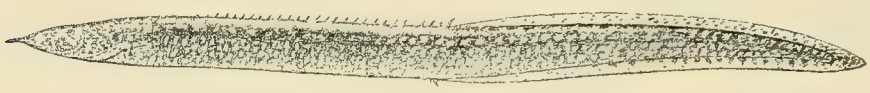
Depth of body 12 to 13 times in total length, length of head $8\frac{2}{3}$ to 9 times. Vent nearly equally distant from end of snout and from caudal,

its distance from head about $3\frac{1}{2}$ times length of latter. Snout 3 times as long as eye, ending in an appendage which is nearly twice as long as eye; mouth extending to below anterior border of eye; a small præorbital spine; two præopercular spines. Dorsal XXVI–XXX 80; distance between first spine and head about $\frac{2}{3}$ length of latter. Anal II 80. Caudal rounded. Pectoral about $\frac{1}{4}$ length of head. Scales very small, 20 between origin of soft dorsal and lateral line. Purplish grey above, yellowish beneath, sides with a dark network the meshes of which widen towards the caudal; dorsal and anal fins dark purplish with a light edge, with whitish spots towards the caudal.

Total length 290 millim.

Liberia.—Type in Leyden Museum *.

Fig. 73.



Mastacembelus loennbergii.
Type.

8. MASTACEMBELUS LOENNBERGII.

Mastacembelus cryptacanthus (non Günth.), Lönnb. Öfvers. Vet.-Akad. Förh. Stockholm, 1895, no. 3, p. 181.

Mastacembelus loennbergii, Bouleng. Tr. Zool. Soc. xv. 1898, p. 23, and Proc. Zool. Soc. 1902, ii. p. 329, pl. xxix. fig. 3; Pellegr. Poiss. Bass. Tchad, p. 138, fig. (1914).

Depth of body 13 to 17 times in total length, length of head 7 to 9 times. Vent nearly equally distant from end of snout and from caudal, its distance from head $2\frac{2}{3}$ to $3\frac{1}{4}$ times length of latter. Snout 3 times as long as eye, ending in an appendage which is about $1\frac{1}{2}$ times as long as eye; mouth extending to below posterior nostril; an erectile spine below posterior nostril; 2 or 3 strong opercular spines. Dorsal XXVIII–XXXII 100–130; spines short, last scarcely longer than eye; distance between first spine and head $\frac{1}{2}$ to $\frac{2}{3}$ length of latter. Anal II 100–130. Caudal obtusely pointed. Pectoral about $\frac{1}{3}$ length of head. Scales very small, 15 to 18 between origin of soft dorsal and lateral line; latter formed of a few tubules, widely separated from one another. Uniform brownish with an ill-defined darker lateral band, or spotted with darker and lighter, the lower parts of the sides sometimes

* I am indebted to the kindness of Mlle. Dr. C. L. Popta for notes on this specimen.

with round yellow spots surrounded by a dark network; alternating dark and light bars may be present at the base of the anal fin.

Total length 190 millim.

Cameroon, Lower Niger, Sierra Leone, Chad Basin.—Types in Stockholm Museum.

1. One of the types.	Bonge, Cameroon.	Mr. Y. Sjöstedt (C.); Stockholm Museum (P.).
2–3. Ad.	Kribi R., S. Cameroon.	G. L. Bates, Esq. (C.).
4. Ad.	Nyong R., „	„
5. Ad.	Oguta, Lower Niger.	Dr. W. J. Ansorge (C.).
6. Ad.	Abo, „	„
7. Ad.	Agberi, „	„
8–9. Hgr.	Gregani, „	„
10. Ad.	Assay, „	„
11. Ad.	N. Sherbo District, Sierra Leone.	N. W. Thomas, Esq. (P.).
12. Ad.	Victoria, Sierra Leone.	„

Fig. 74.

Mastacembelus goro.
Type (A. M. C.). $\frac{1}{2}$.

9. MASTACEMBELUS GORO.

Boulenger, Ann. Mus. Congo, Zool. ii. p. 54, pl. xv. fig. 3 (1902).

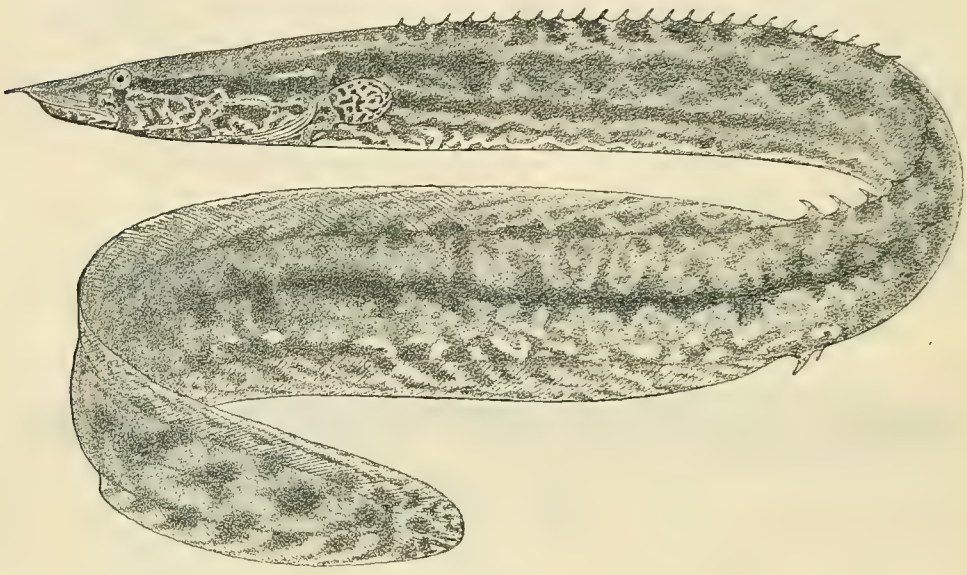
Depth of body 16 to 20 times in total length, length of head 8 to 10 times. Vent nearly equally distant from eye and from caudal, its distance from head 3 to 4 times length of latter. Snout 3 times as long as eye, ending in an appendage which is $1\frac{1}{2}$ times as long as eye; mouth extending to below anterior border of eye; no præorbital spine; two præopercular spines. Dorsal XXIX–XXXII 80–85; spines very short, last $1\frac{1}{2}$ times as long as eye; distance between first spine and head nearly equal to length of latter. Anal II 80–85. Caudal rounded. Pectoral about $\frac{2}{7}$ length of head. Scales very small, 16–18 between origin of soft dorsal and lateral line. Dark grey-brown above, with darker marblings or vermiculations, yellowish or dirty white beneath; a series of large dark spots may be present on each side of the anterior part of the back; dorsal and anal fins blackish, with or without small white spots or marblings; anal edged with white; pectoral whitish, with black spots.

Total length 370 millim.

Ubanghi and South Cameroon.—Types in Congo Museum, Tervueren.

1–2. Types.	Banzyville.	Capt. Royaux (C.).
3–4. Ad.	Nyong R., S. Cameroon.	G. L. Bates, Esq. (C.).

Fig. 75.



Mastacembelus ansorgii.
Type. $\frac{2}{3}$.

10. MASTACEMBELUS ANSORGII.

Boulenger. Ann. & Mag. N. H. (7) xv. 1905, p. 459.

Depth of body 20 times in total length, length of head $8\frac{1}{2}$ times. Vent equally distant from end of snout and from caudal, its distance from head $\frac{1}{3}$ length of latter. Snout $3\frac{1}{2}$ times as long as eye, ending in an appendage which is as long as eye; mouth extending to below centre of eye; no præorbital spine; 2 or 3 strong præopercular spines. Dorsal XXXIV 128; spines increasing in length to the last, which measures $1\frac{1}{2}$ diameters of eye; distance between first spine and head $\frac{1}{3}$ length of latter. Anal II 120. Caudal rounded. Pectoral $\frac{1}{5}$ length of head. Scales very small, 20 between origin of soft dorsal and lateral line. Olive-brown above, yellow beneath, with dark brown spots and marblings; three series of large spots on the back, the lateral series confluent into a wavy band on the tail; below these spots a straight

band along the body, disappearing a little in advance of the vent; a dark band on each side of the head, and a vertical bar below the eye; fins yellow, with dark brown spots and oblique streaks.

Total length 445 millim.

Quanza River, Angola.

1. Type. Quanza R. Dr. W. J. Ansorge (C.).

Fig. 76.

Mastacembelus congicus.
Monsembe. $\frac{5}{8}$.

11. MASTACEMBELUS CONGICUS.

Bouleng. Ann. & Mag. N. H. (6) xvii. 1896, p. 311, Tr. Zool. Soc. xv. 1898, p. 23, and Poiss. Bass. Congo, p. 494 (1901).

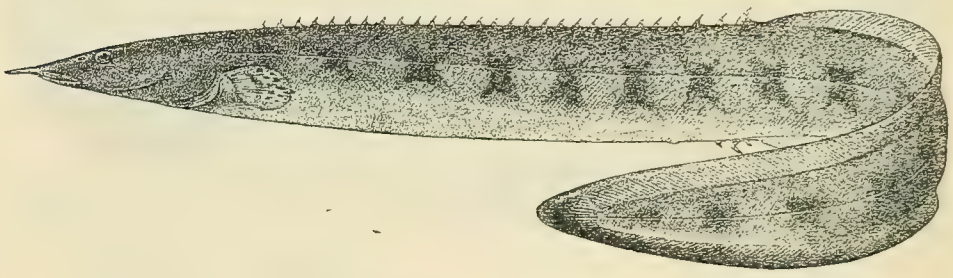
Depth of body 10 to 11 times in total length, length of head $6\frac{1}{2}$ to 8 times. Vent equally distant from end of snout and from caudal, its distance from head 2 to 3 times length of latter. Snout 3 to 4 times as long as eye, ending in an appendage which is $1\frac{1}{2}$ to 2 times as long as eye; mouth extending hardly to below posterior nostril; a strong erectile spine below latter; two strong præopercular spines. Dorsal XXV–XXVIII 85–90; spines increasing in length to the last, which is $1\frac{1}{2}$ times as long as eye; distance between first spine and head $\frac{2}{7}$ to $\frac{1}{2}$ length of latter. Anal III 85–92; second spine longest. Caudal rounded or obtusely pointed. Pectoral $\frac{2}{7}$ to $\frac{1}{3}$ length of head. Scales very small, 23–26 between origin of soft dorsal and lateral line. Brown above, vermiculate or marbled with darker; usually a lateral series of **V**- or **X**-shaped dark markings; belly white; pectoral usually spotted with black; dorsal spotted with black; a series of large round white spots, edged with black, at the base of the anal.

Total length 360 millim.

Congo, Gaboon.

1. Hgr.	Upper Benito R., Spanish Guinea, 200–300 ft.	G. L. Bates, Esq. (C.).
2. Ad.	Loango, Lower Congo.	M. De Meuse (C.).
3. Skel.	„ „	„
4–6. Hgr. & yg.	Sankuru R. at Kondue, Kasai.	M. E. Luja (C.); Luxemburg Museum (P.).
7. Type.	Upper Congo, 50 miles S. of Mangala.	Rev. J. H. Weeks (P.).
8. Ad.	Monsembe, Upper Congo.	„
9. Ad.	Banzyville, Ubanghi.	Capt. Royaux (C.).
10. Ad.	Aruwimi R., 2000 ft.	R. B. Woosnam, Esq. (C.).

Fig. 77.



Mastacembelus signatus.
Type. $\frac{2}{3}$.

12. MASTACEMBELUS SIGNATUS.

Bouleng. Ann. & Mag. N. H. (7) xvi. 1905, p. 647.

Depth of body $10\frac{1}{2}$ times in total length, length of head 7 times. Vent equally distant from end of snout and from caudal, its distance from head $2\frac{2}{3}$ times length of latter. Snout 3 times as long as eye, ending in an appendage which is twice as long as eye; mouth extending to below posterior nostril; a strong erectile spine below latter; three strong præopercular spines. Dorsal XXIX 85; last spine longest, $1\frac{1}{2}$ times as long as eye; distance between first spine and head $\frac{1}{4}$ length of latter. Anal III 85; second spine longest. Pectoral about $\frac{1}{3}$ length of head. Caudal rounded. Scales very small, about 20 between origin of soft dorsal and lateral line. Brownish above, yellow beneath; a series of 14 large **X**-shaped markings on each side of the body; small dark spots on the pectoral; anal and caudal dark edged.

Total length 275 millim.

Lake Bangwelu.

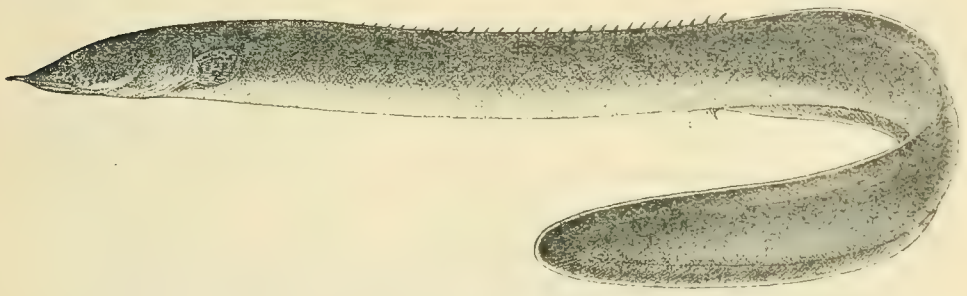
1. Type.	L. Bangwelu.	F. H. Melland, Esq. (P.).

13. MASTACEMBELUS NIGER.

Sauv. Bull. Soc. Philom. (7) iii. 1878, p. 95, and N. Arch. Mus. (2) iii. 1880, p. 37.

Depth of body 14 to 16 times in total length, length of head 8 to 9 times. Vent nearly equally distant from end of snout and from caudal, its distance from head 3 times length of latter. Snout 4 times as long as eye, ending in an appendage which is a little longer than eye; mouth extending to below anterior third of eye; no præorbital or præopercular spines. Dorsal XXVII 80–90; spines very short, last a little longer than eye; distance between first spine and head as long as latter.

Fig. 78.



Mastacembelus niger.
Nchali. $\frac{2}{3}$.

Anal II 68–80. Caudal rounded. Pectoral $\frac{2}{7}$ to $\frac{1}{3}$ length of head. Scales very small, 32–35 between origin of soft dorsal and anal; no distinct lateral line. Dark brown above, yellowish beneath, with very indistinct darker marblings; dorsal and anal edged with yellowish; pectoral with small blackish spots.

Total length 290 millim.

Ogowe.—Type, in Paris Museum, examined.

1. Ad. Nchali, Lake Asebbe, near Fernan-Vaz. Dr. W. J. Ansorge (C.).

14. MASTACEMBELUS FLAVOMARGINATUS.

Bouleng. Tr. Zool. Soc. xv. 1898, p. 23.

Mastacembelus cryptacanthus, part., Günth. Ann. & Mag. N. H. (3) xx. 1867, p. 110.

Depth of body 13 to 16 times in total length, length of head 8 to $9\frac{1}{2}$ times. Vent nearly equally distant from end of snout and from caudal, its distance from head 3 to 4 times length of latter. Snout 3 times as

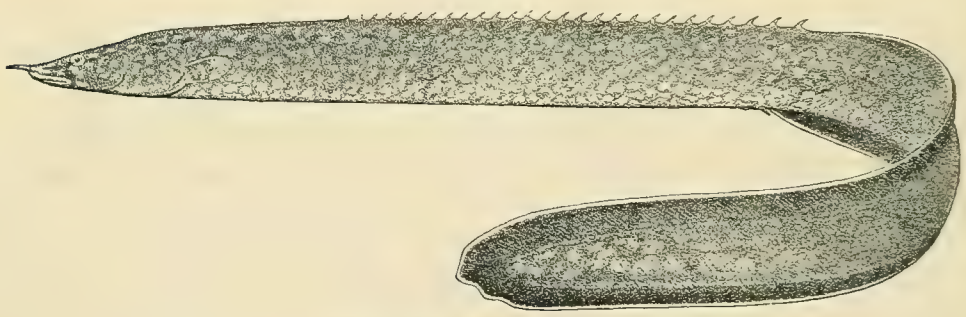
long as eye, ending in an appendage which is about $1\frac{1}{2}$ times as long as eye; mouth extending to below anterior border of eye; no præorbital or præopercular spines. Dorsal XXV–XXVIII 73–80; spines increasing in length to the last, which is about $1\frac{1}{2}$ times length of eye; distance between first spine and head equal to or a little greater or a little less than length of head. Anal II 80–90. Caudal rounded. Pectoral $\frac{2}{7}$ to $\frac{1}{3}$ length of head. Scales very small, 15 to 18 between origin of soft dorsal and lateral line; latter formed of a few tubules widely separated from one another. Brown, more or less distinctly reticulate with darker; the reticulation enclosing light spots; dorsal and anal fins in the adult dark brown or black, edged with yellowish, in the young white, spotted with black; pectoral with small dark spots or cross-bars.

Total length 310 millim.

South Cameroon to Portuguese Congo.

1–2, 3. Types.	Gaboon.	R. B. N. Walker, Esq. (C.).
4. Hgr.	„	
5. Hgr.	Lambarene, Ogowe.	Miss Kingsley (C.).
6. Ad.	Benito River, Spanish Guinea.	G. L. Bates, Esq (C.).
7. Ad.	Efulen, S. Cameroon.	„
8–12. Ad., hgr., & yg.	Lundo, Luali R., Portuguese Congo.	Dr. W. J. Ansorge (C.).

Fig. 79.



Mastacembelus flavomarginatus.
Type. $\frac{2}{3}$.

15. MASTACEMBELUS BATESII.

Bouleng. Ann. & Mag. N. H. (8) viii. 1911, p. 637.

Depth of body 15 to 16 times in total length, length of head 8 to 9 times. Vent nearly equally distant from end of snout and from caudal, its distance from head 3 to $3\frac{1}{2}$ times length of latter Snout 3 to 4 times as long as eye, ending in an appendage which is a little longer

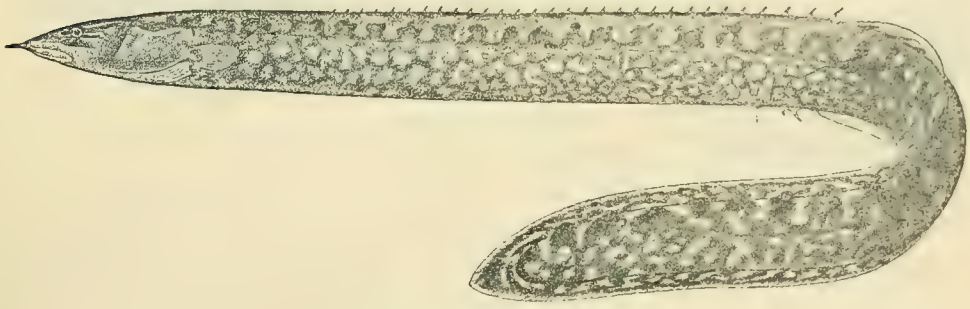
than eye; mouth extending to below anterior third or centre of eye; no præorbital or præopercular spines. Dorsal XXX–XXXIII 80–90; spines extremely short, last scarcely longer than eye; distance between first spine and head $\frac{2}{3}$ to $\frac{4}{5}$ length of head. Anal II 80–90. Caudal rounded-subacuminate. Pectoral $\frac{1}{4}$ length of head. Scales very small, 16 to 18 between origin of soft dorsal and lateral line; latter formed of a few tubules widely separated from one another. Brown or olive above, with dark spots or marblings and a vertebral series of small black spots; a regular series of round or squarish dark brown spots on each side of the back, sometimes confluent into a wavy band; yellowish on the sides, with a more or less distinct brown network; dorsal and anal fins spotted with brown.

Total length 320 millim.

South Cameroon.

1–5. Types.	Ja R. at Bitye.	G. L. Bates, Esq. (C.).
6–12. Ad.	,,	,,
13. Skel.	,,	,,

Fig. 80.



Mastacembelus batesii.
Type.

16. MASTACEMBELUS MOORII.

Bouleng. Tr. Zool. Soc. xv. 1898, p. 22, pl. vii. fig. 1, Poiss. Bass. Congo, p. 493 (1901), and Tr. Zool. Soc. xvii. 1906, p. 575.

Depth of body 14 times in total length, length of head $7\frac{1}{2}$ times. Vent equally distant from end of snout and from caudal, its distance from head $2\frac{1}{2}$ to 3 times length of latter. Snout 3 times as long as eye, ending in an appendage which is a little longer than the eye; mouth extending to below centre of eye; no præorbital or præopercular spines.

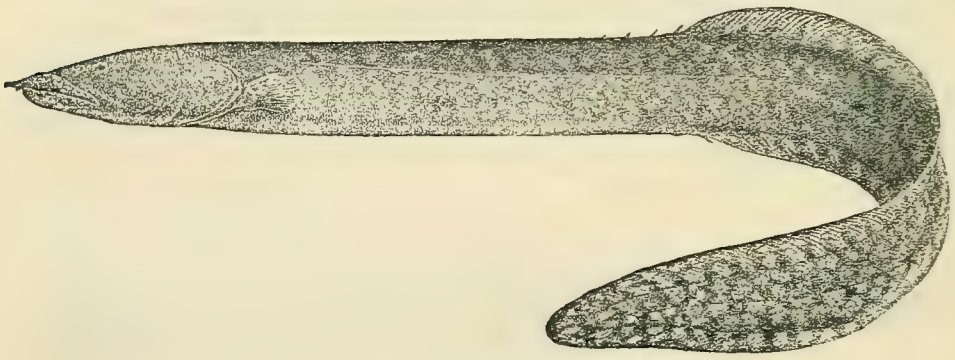
Dorsal XXV–XXVII 70–80; spines very short; distance between first spine and head $\frac{1}{2}$ length of latter. Anal II 70–80. Caudal rounded. Pectoral $\frac{1}{4}$ length of head. Scales extremely small, 30–35 between origin of soft dorsal and lateral line. Brown, tail with a wide-meshed blackish network; dorsal and anal fins whitish, with a series of blackish spots or vertical bars; anal and caudal edged with blackish.

Total length 440 millim.

Lake Tanganyika.

1–2. Types.	Mbity Rocks.	Prof. J. E. S. Moore (C.).
3–7. Yg.	Utinta.	Dr. W. A. Cunnington (C.).

Fig. 81.



Mastacembelus moorii.
Type (Tr. Z. S. 1898). $\frac{1}{2}$.

17. MASTACEMBELUS SHIRANUS.

Günth. Ann. & Mag. N. H. (6) xvii. 1896, p. 397; Bouleng. Tr. Zool. Soc. xv. 1898, p. 23.

Depth of body 12 to 14 times in total length, length of head 7 to 8 times. Vent equally distant from end of snout and from caudal, its distance from head $2\frac{2}{3}$ to 3 times length of latter. Snout 3 times as long as eye, ending in an appendage which is as long as or slightly longer than eye; mouth extending to below anterior border of eye; no præorbital or præopercular spines. Dorsal XXVI–XXIX 65–70; spines short, last about $1\frac{1}{2}$ diameters of eye; distance between first spine and head $\frac{1}{2}$ length of latter. Anal II 60–65; first spine very short, often indistinct. Caudal rounded. Scales very small, 18–22 between origin of soft dorsal and lateral line. Greyish or brownish, spotted or handsomely marbled with dark brown; dark brown streak

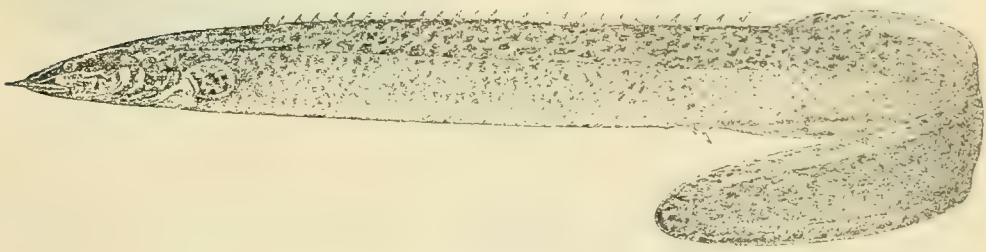
along the upper surface of the head, from between the eyes, followed by a vertebral series of spots; a dark band on each side of the head, passing through the eye, widening on the temple, and sometimes prolonged on the body above the lateral line; a series of large brown spots along the base of the dorsal and anal fins; lower parts whitish, uniform or spotted or marbled with brown.

Total length 260 millim.

Lake Nyassa and Upper Shiré River.

1–2. Types.	Upper Shiré R.	A. Whyte, Esq. (C.); Sir H. H. Johnston (P.).
3–5. Ad. & yg.	Fort Johnston.	Dr. Percy Rendall (C.); Sir H. H. Johnston (P.).
6. Hgr.	S.W. Coast of L. Nyassa.	Universities Mission.
7–8. Ad. & hgr.	L. Nyassa between Kondowe and Karanga.	A. Whyte, Esq. (C.); Sir H. H. Johnston (P.).

Fig. 82.



Mastacembelus shiranus.
Type. $\frac{2}{3}$.

18. MASTACEMBELUS NIGROMARGINATUS.

Bouleng. Tr. Zool. Soc. xv. 1898, p. 23.

Depth of body 12 to 15 times in total length, length of head 7 to $8\frac{1}{2}$ times. Vent slightly nearer caudal than end of snout, its distance from head $2\frac{2}{3}$ to 3 times length of latter. Snout 3 to 4 times as long as eye, ending in an appendage which is $1\frac{1}{2}$ to 2 times as long as eye; mouth extending to below anterior border or anterior third of eye; no præorbital or præopercular spines. Dorsal XXVII–XXIX 95–100; spines increasing in length to the last, which is $1\frac{1}{2}$ length of eye; distance between first spine and head $\frac{1}{3}$ length of latter. Anal II 85–90. Caudal rounded. Pectoral $\frac{2}{7}$ length of head. Scales very small, 23–25

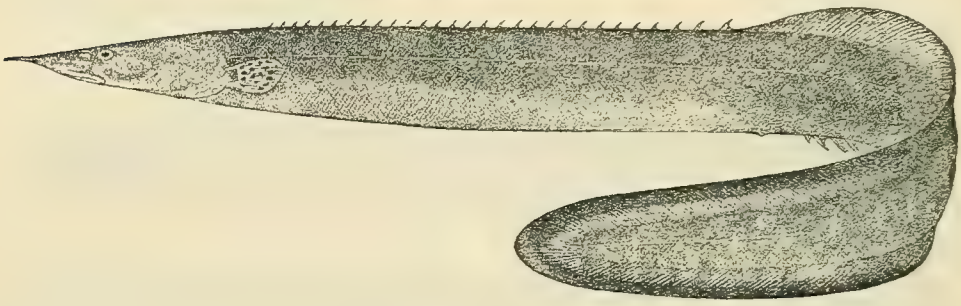
between origin of soft dorsal and lateral line. Brown, with lighter spots, which are more distinct on the caudal region; dorsal and anal fins edged with brown or black; pectoral with small dark spots.

Total length 330 millim.

Ashantee.

1. Type.	Ashantee.	
2. Ad.	Sacred Lake, Buchumachi, near Kumasi R.	C. Beddington Esq. (P.).
3. Yg.	Sefwi.	A. Nell, Esq. (P.).

Fig. 83.



Mastacembelus nigromarginatus.
Type. $\frac{1}{2}$.

19. MASTACEMBELUS MOERUENSIS.

Bouleng. Rev. Zool. Afr. iii. 1914, p. 446.

Depth of body 17 times in total length, length of head 8 times. Vent a little nearer end of snout than caudal, its distance from head $3\frac{1}{3}$ times length of latter. Snout $3\frac{1}{2}$ times as long as eye, ending in an appendage which is as long as latter; mouth extending to below anterior border of eye; no præorbital or præopercular spines. Dorsal XXX 75; spines short, last scarcely longer than eye; distance between first spine and head not quite $\frac{1}{2}$ length of head. Anal II 75. Caudal rounded. Pectoral $\frac{1}{5}$ length of head. Scales very small, 18 between origin of soft dorsal and lateral line. Dark brown, belly whitish.

Total length 265 millim.

Lake Mweru.—Type in Congo Museum, Tervueren.

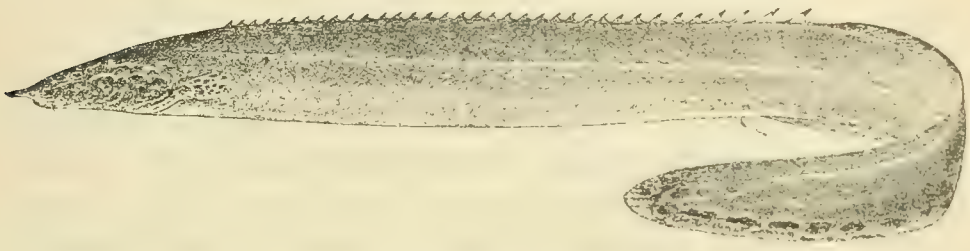
20. MASTACEMBELUS VICTORIÆ.

Bouleng. Ann. & Mag. N. H. (7) xii. 1903, p. 218, and Fish. Nile, p. 541, fig. (1907).

Mastacembelus shiranus?, Günth. Ann. & Mag. N. H. (6) xvii. 1896, p. 397.

Depth of body 11 to 14 times in total length, length of head $7\frac{1}{2}$ to 9 times. Vent nearly equally distant from end of snout and from caudal, its distance from head 3 to $3\frac{1}{2}$ times length of latter. Snout 3 to 4 times as long as eye, ending in an appendage which is as long as or longer than eye; mouth extending to below posterior nostril; no præorbital or præopercular spines. Dorsal XXXII–XXXV 100; spines increasing

Fig. 84.



Mastacembelus victoriæ.
Type (F. N.). $\frac{5}{8}$.

in length, last nearly $\frac{1}{4}$ length of head; distance between first spine and head $\frac{1}{3}$ length of latter. Anal II 100. Caudal rounded. Pectoral about $\frac{1}{3}$ length of head. Scales very small, about 20 between origin of soft dorsal and lateral line. Dark brown above, yellowish beneath, sides with small light spots; head pale brown, spotted or marbled with darker and with a wavy lateral band, passing through the eye; a series of large, round, dark brown spots may be present along the lower edge of the caudal region; dorsal and anal fins with black spots; pectoral uniform white or with small black spots.

Total length 330 millim.

Lake Victoria and Victoria Nile.

1. Type.	L. Victoria.	Mr. W. G. Doggett (C.); Col. Delmé Radcliffe (P.).
2. Type.	,,	Dr. E. J. Baxter (C.).
3–5. Ad.	Bunjako, L. Victoria.	Mr. E. Degen (C.).
6. Ad.	Buganga, ,,	,,
7–8. Hgr. & yg.	Nakavuggo near Kakindu, Victoria Nile.	Dr. E. Bayon (C.); Genoa Museum (P.).

21. MASTACEMBELUS UBANGENSIS.

Bouleng. Ann. & Mag. N. H. (8) viii. 1911, p. 637.

Mastacembelus marmoratus (non Perugia), Bouleng. Ann. Mus. Congo, Zool. ii. p. 22 (1902).

Depth of body 15 to 16 times in total length, length of head 7 times. Vent equally distant from head and from caudal, its distance from head 3 times length of latter. Snout twice as long as eye, ending in an appendage which is hardly as long as eye; mouth extending to below

Fig. 85.

Mastacembelus ubangensis.
Type.

anterior border of eye; a strong erectile spine below posterior nostril; two strong præopercular spines. Dorsal XXIX–XXX 110; distance between first spine and head $\frac{3}{4}$ length of latter. Anal II 110. Caudal pointed. Pectoral $\frac{1}{4}$ length of head. Scales very small, about 15 between origin of soft dorsal and lateral line. Brownish, with an ill-defined darker band along the side of the head and body; vertical fins whitish; with a series of large black spots at the base of the posterior part of the dorsal; a black spot on the caudal.

Total length 100 millim.

Ubanghi.—Type in Congo Museum, Tervueren.

1. One of the types. Banzyville. Capt. Royaux (C.).

22. MASTACEMBELUS ELLIPSIFER.

Bouleng. Ann. Mus. Congo, Zool. i. p. 126, pl. xlii. fig. 4 (1899), and Poiss. Bass. Congo, p. 496, pl. xxiv. fig. 2 (1901).

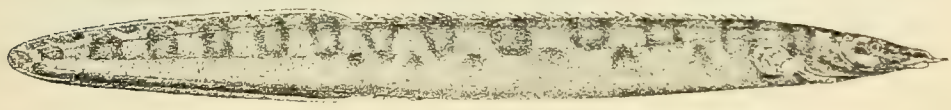
Depth of body $10\frac{1}{2}$ times in total length, length of head 7 times. Vent equally distant from head and from caudal, its distance from head 3 times length of latter. Snout 3 times as long as eye, ending in an appendage which is as long as eye; mouth not extending to below posterior nostril; a strong erectile spine below atter; two strong præopercular spines. Dorsal XXXI 70; distance between first spine and head $\frac{1}{3}$ length of latter. Anal II 70. Caudal rounded. Pectoral $\frac{1}{3}$ length of head. Scales very small, 20 between origin of soft dorsal

and lateral line. Yellowish, with 12 elliptic, brown, dark-edged bands across the back and another across the occiput; a series of roundish brown spots below the lateral line, alternating with the dorsal bands; dorsal and anal fins spotted with black and edged with white; pectoral with two dark transverse streaks.

Total length 260 millim.

Lake Tanganyika.—Type in Congo Museum, Tervueren.

Fig. 86.



Mastacembelus ellipsifer.
Type (A. M. C.). $\frac{1}{2}$.

23. MASTACEMBELUS MARMORATUS.

Perugia, Ann. Mus. Genova, (2) x. 1892, p. 968; Bouleng. Tr. Zool. Soc. xv. 1898, p. 23, and Poiss. Bass. Congo, p. 495 (1901).

Depth of body nearly 20 times in total length, length of head 7 to 9 times. Vent equally distant from head and from caudal. Rostral appendage twice as long as eye; mouth extending to below posterior border of eye; no præorbital spine; two small præopercular spines. Dorsal XXX–XXXII 85; distance between first spine and head $\frac{2}{3}$ length of latter. Anal II 70. Caudal rounded. Scales very small, 17 between origin of soft dorsal and lateral line. Yellowish, with brown network enclosing round spots disposed irregularly; dorsal yellowish white, spotted with dark brown, anal with a single series of brown spots.

Total length 230 millim.

Lower Congo.—Types, in Genoa Museum, examined.

24. MASTACEMBELUS BREVICAUDA.

Bouleng. Ann. & Mag. N. H. (8) viii. 1911, p. 638.

Depth of body 13 to 14 times in total length, length of head 7 to $8\frac{1}{2}$ times. Vent equally distant from head or præoperculum and from caudal, its distance from head 3 to $3\frac{1}{2}$ times length of latter. Snout 3 times as long as eye, ending in an appendage which is as long as eye;

mouth extending to below anterior third or centre of eye; no præorbital spine; 2 or 3 small præopercular spines. Dorsal XXIX–XXXII 70–80; spines very short, last scarcely longer than eye; distance between first spine and head $\frac{2}{3}$ to $\frac{3}{4}$ length of latter. Anal II 70–80; first spine minute, often very indistinct. Caudal obtusely

Fig. 87.

Mastacembelus brevicauda.
Type, Assobam. $\frac{2}{3}$.

pointed. Pectoral $\frac{1}{4}$ length of head. Scales very small, 15–17 between origin of soft dorsal and lateral line; latter formed of a few tubules, widely separated from one another. Olive-brown above, usually with a more or less distinct dark brown band on each side of the back above the lateral line, and a vertebral series of small dark brown spots corresponding with the spines; sides mottled with dark brown; caudal region marbled with dark brown, with light spots towards the caudal fin, which bears one or several large black spots and is edged with whitish; yellowish beneath, sometimes with a brown network.

Total length 200 millim.

South Cameroon.

1–5. Types.	Kribi R.	G. L. Bates, Esq. (C.).
6–9. Types.	Zima Country.	,,
10–12. Types.	Ja R. at Bitye.	,,
13–15. Types.	Bumba R. at Assobam.	,,

25. MASTACEMBELUS RETICULATUS.

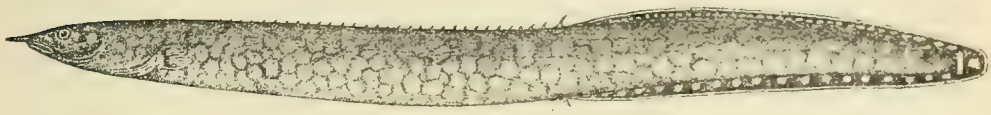
Bouleng. Ann. & Mag. N. H. (8) viii. 1911, p. 638.

? *Mastacembelus cryptacanthus* (non Günth.), Steind. Denkschr. Ak. Wien, xli. 1879, p. 16.

Depth of body 11 to 12 times in total length, length of head 7 to $7\frac{1}{3}$ times. Vent equally distant from head and from caudal, its distance from former 3 times its length. Snout 3 times as long as eye, ending in an appendage which is $1\frac{1}{2}$ times as long as eye; mouth extending to below posterior nostril; no præorbital spine; two strong præopercular spines. Dorsal XXXI–XXXII 90; spines extremely short, last longest,

not longer than eye; distance between first spine and head $\frac{1}{2}$ length of latter. Anal II 90–95; first spine extremely short, very indistinct. Caudal rounded. Pectoral $\frac{1}{4}$ length of head. Scales very small, 20 between origin of soft dorsal and lateral line; latter formed of a few tubules widely separated from one another. Brownish, with dark lines

Fig. 88.



Mastacembelus reticulatus.
Type. $\frac{2}{3}$.

forming a wide-meshed network; dorsal, anal, and caudal fins blackish, with round white spots more or less regularly arranged, and a white border.

Total length 190 millim.

Sierra Leone.

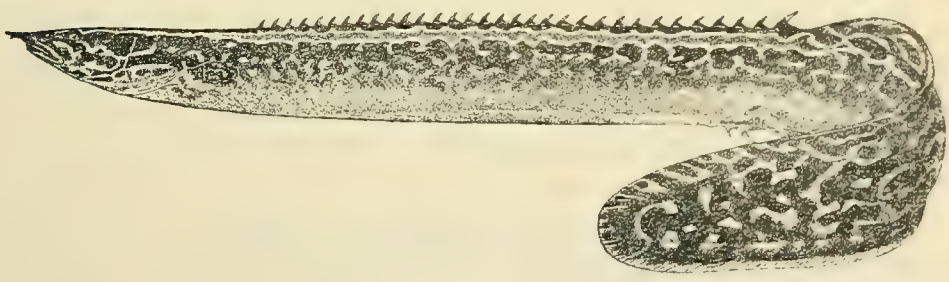
1–2. Types.	Sierra Leone.	Liverpool School of Trop. Medicine (P.).

26. MASTACEMBELUS MELLANDI.

Bouleng. Ann. & Mag. N. H. (8) iv. 1914, p. 386.

Depth of body 12 times in total length, length of head $7\frac{1}{2}$ times. Vent equally distant from head and from caudal, its distance from

Fig. 89.



Mastacembelus mellandi.
Type. $\frac{1}{2}$.

former 3 times its length. Snout 4 times as long as eye, ending in an appendage which is $1\frac{1}{2}$ times as long as eye; mouth extending to below anterior border of eye; no præorbital or præopercular spines. Dorsal

XXXII 70; last spine twice as long as eye; distance between first spine and head $\frac{1}{2}$ length of latter. Anal II 75; first spine short, second as long as last dorsal. Caudal rounded. Pectoral $\frac{1}{3}$ length of head. Scales very small, 15 between origin of soft dorsal and lateral line. Yellowish brown with blackish-brown marblings and a broad, festooned, blackish-brown lateral band in front; a vertebral series of large blackish-brown spots narrowly separated from each other; a pair of yellowish streaks, confluent in front, on each side of the back between the dark bands; caudal region blackish brown with a network of yellow lines; lower edge of anal yellow.

Total length 310 millim.

Northern Rhodesia.

1. Type. Solwezi R., trib. of Chifubwa R., near Zambesi in Congo watershed. F. H. Melland, Esq. (P.).

Fig. 90.

Mastacembelus brachyrhinus.
Type (A. M. C.). $\frac{4}{5}$.

27. MASTACEMBELUS BRACHYRHINUS.

Bouleng. Ann. Mus. Congo, Zool. i. p. 55, pl. xxviii. fig. 4 (1899), and Poiss. Bass. Congo, p. 497 (1901).

Depth of body 12 times in total length, length of head $6\frac{2}{3}$ times. Vent at nearly equal distance from head and from caudal, its distance from head $2\frac{2}{3}$ times length of latter. Snout 3 times as long as eye, ending in a very short appendage, which measures about $\frac{1}{2}$ diameter of eye; mouth extending to below anterior border of eye; no præorbital or præopercular spines. Dorsal XXXI 51; distance between first spine and head $\frac{1}{3}$ length of latter. Anal III 53; second spine longest. Caudal rounded. Pectoral not quite $\frac{1}{4}$ length of head. Scales extremely small, 28 between origin of soft dorsal and lateral line. Uniform brownish.

Total length 150 millim.

Lower Congo (Matadi).—Type in Congo Museum, Tervueren.

28. MASTACEMBELUS STAPPERSII.

Bouleng. Rev. Zool. Afr. iii. 1914, p. 446.

Depth of body 11 to 12 times in total length, length of head 6 to 7 times. Vent nearly equally distant from head and from caudal, its distance from head $2\frac{1}{3}$ to $2\frac{2}{3}$ times length of latter. Snout 2 to $2\frac{1}{2}$ times as long as eye, ending in an appendage which is about as long as eye; mouth extending to below anterior border of eye; no præorbital or præopercular spines. Dorsal XXXII–XXXIII 80–83; distance between first spine and head about $\frac{2}{5}$ length of latter. Anal III 85–88. Caudal rounded. Pectoral nearly $\frac{1}{3}$ length of head. Scales very small, 22 or 23 between origin of soft dorsal and lateral line, which is very indistinct. Back pale brown or yellowish, with or without a series of large dark brown spots, the pale colour separated from the dark brown of the sides by a blackish-brown lateral band, extending to the tip of

Fig. 91.

Mastacembelus stappersii.
Type. $\frac{5}{6}$.

the snout and passing through the eye; dorsal brown and anal whitish with a dark brown longitudinal streak, or both fins whitish with a basal series of large dark brown spots.

Total length 155 millim.

Lake Mweru and rivers of Katanga (Lubumbashi R. and Luapula R.). —Types in Congo Museum, Tervueren.

1–2. Young, types. Lubumbashi R., near Elisabethville. Dr. L. Stappers (C.).

29. MASTACEMBELUS TRISPINOSUS.

Steind. Anz. Ak. Wien, 1911, p. 529, and Sitzb. Ak. Wien, cxx. 1. 1911, p. 1183

Depth of body about 12 times in total length, length of head 7 times. Vent nearer base of caudal than end of snout. Snout 3 times as long as eye, ending in an appendage which measures $1\frac{3}{5}$ times diameter of latter; mouth not extending to below anterior border of eye; 3 præopercular spines. Dorsal XXXI 95. Anal III 70. Caudal rounded.

Pectoral $3\frac{2}{3}$ times in length of head. Purplish grey, with a dark band on the side of the head, and 16 or 17 oblique dark bands, directed downwards and forwards, on the side of the body.

Total length 335 millim.

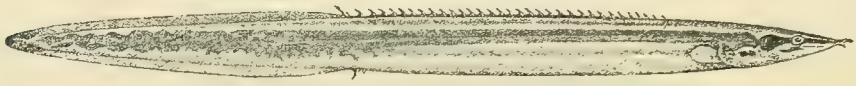
Ituri River, Congo.—Type in Vienna Museum.

30. MASTACEMBELUS TÆNIATUS.

Bouleng. Ann. & Mag. N. H. (7) vii. 1901, p. 6, Poiss. Bass. Congo, p. 498 (1901), and Tr. Zool. Soc. xvi. 1901, p. 160, pl. xx. fig. 4, and xvii. 1906, p. 576.

Depth of body 13 times in total length, length of head $6\frac{1}{2}$ times. Vent equally distant from head and from caudal, its distance from head 3 times length of latter. Snout twice as long as eye, ending in an

Fig. 92.



Mastacembelus tæniatus.
Type (Tr. Z. S. 1901).

appendage as long as latter; mouth extending to below anterior border of eye; no præorbital or præopercular spines. Dorsal XXXIII–XXXV 85; last spine a little longer than eye; distance between first spine and head $\frac{1}{3}$ length of latter. Anal II 85. Caudal rounded. Pectoral $\frac{1}{5}$ length of head. Scales extremely small, 25 between origin of soft dorsal and lateral line. Yellowish; a brown lateral band, from the end of the snout, through the eye, to the caudal region, where it widens, becomes sinuous, and bears some yellow spots.

Total length 105 millim.

Lake Tanganyika.

1. Type.	N. end of L. Tanganyika.	Prof. J. E. S. Moore (C.).
2. Yg.	Niamkolo Bay.	Dr. W. A. Cunnington (C.).
3. Yg.	Kasawa.	,,

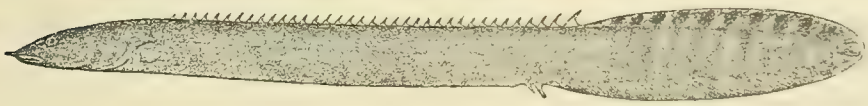
31. MASTACEMBELUS TANGANICÆ.

Günth. Proc. Zool. Soc. 1893, p. 629, and Ann. & Mag. N. H. (6) xvii. 1896, p. 397; Bouleng. Poiss. Bass. Congo, p. 496 (1901).

Depth of body 10 to 14 times in total length, length of head 7 to $7\frac{1}{2}$ times. Vent nearer caudal than head, from which it is separated by

a space equal to $3\frac{1}{3}$ to $4\frac{1}{2}$ times its length. Snout 2 to $2\frac{1}{2}$ times as long as eye, ending in an appendage shorter than latter; mouth extending to below posterior nostril or anterior border of eye; no præorbital spine; a small præopercular spine. Dorsal XXXVI–XXXIX 50–60; distance between first spine and head $\frac{2}{5}$ to $\frac{1}{2}$ length of latter. Anal II 50–60;

Fig. 93.



Mastacembelus tanganicæ.
Type. $\frac{2}{3}$.

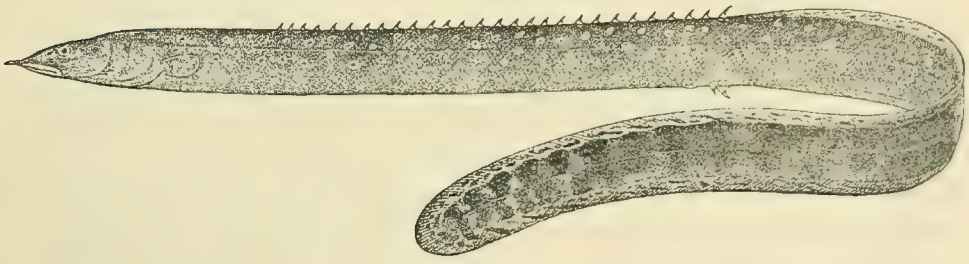
first spine extremely small. Caudal rounded. Pectoral $\frac{1}{4}$ length of head. Scales extremely small, about 20 between origin of soft dorsal and lateral line. Brownish (discoloured), with traces of dark vertical bars on the caudal region.

Total length 170 millim.

Lake Tanganyika.

1–6. Types. Near Ujiji. E. Coode Hore, Esq. (P.).

Fig. 94.



Mastacembelus longicauda.
Type. $\frac{2}{3}$.

32. MASTACEMBELUS LONGICAUDA.

Bouleng. Ann. & Mag. N. H. (7) xx. 1907, p. 487.

Depth of body 16 to 24 times in total length, length of head $9\frac{1}{2}$ to 11 times. Vent much nearer end of snout than caudal, its distance

from head 3 to 4 times length of latter. Snout 3 to 4 times as long as eye, ending in an appendage which is about $1\frac{1}{2}$ times as long as eye; mouth extending to below anterior border of eye; no præorbital spine; two strong præopercular spines. Dorsal XXV–XXVIII 125–150; last spine $1\frac{1}{2}$ diameters of eye; distance between first spine and head $\frac{1}{2}$ to $\frac{3}{4}$ length of latter. Anal II 125–150. Caudal rounded. Pectoral $\frac{1}{4}$ length of head. Scales very small, 13–15 between origin of soft dorsal and lateral line. Brown above, yellow beneath; a dorsal series of small dark brown spots; sides with lighter spots, some of which are ocellar; end of tail with large dark brown spots.

Total length 330 millim.

South Cameroon and Calabar.

1. Type.	Akok, Kribi R., S. Cameroon.	G. L. Bates, Esq. (C.).
2–5. Ad.	Oban, Calabar.	P. A. Talbot, Esq. (P.).
6. Skel.	,, ,,	,,

Fig. 95.

Mastacembelus greshoffi.
Type. $\frac{2}{3}$.

33. MASTACEMBELUS GRESHOFFI.

Boulenger, Ann. & Mag. N. H. (7) vii. 1901, p. 81, and Poiss. Bass. Congo, p. 498 (1901).

Depth of body 19 times in total length, length of head 9 times. Vent much nearer end of snout than caudal, its distance from head 3 times length of latter. Snout 3 times as long as eye, ending in an appendage which is a little longer than eye; mouth extending to below anterior border of eye; a strong erectile spine below posterior nostril; 4 præopercular spines, upper very strong. Dorsal XXXI 150; spines increasing in length, last $1\frac{1}{2}$ diameters of eye; distance between first spine and head $\frac{2}{5}$ length of latter. Anal II 150. Caudal pointed. Pectoral $\frac{1}{3}$ length of head. Scales very small, 15 between origin of soft dorsal and lateral line. Brownish, marbled with darker.

Total length 200 millim.

Congo.

1. Type.	Stanley Pool.	M. A. Greshoff (C.); Utrecht University (E.).

34. MASTACEMBELUS OPHIDIUM.

Günth. Proc. Zool. Soc. 1893, p. 630 ; Bouleng. Poiss. Bass. Congo, p. 499 (1901), and Tr. Zool. Soc. xvii. 1906, p. 576.

Body feebly compressed, subcylindrical, its depth 21 to 28 times in total length ; length of head $8\frac{1}{2}$ to 10 times. Vent much nearer end of snout than caudal, its distance from head $2\frac{2}{3}$ to $2\frac{3}{4}$ times length of latter. Snout 2 to $2\frac{1}{2}$ times as long as eye, ending in an appendage which is shorter than latter; mouth extending to below posterior border of eye ; no præorbital or præopercular spines. Dorsal XXX–XXXIII 100–120 ; spines very short; distance between first spine and

Fig. 96.

Mastacembelus ophidium.
Burton Gulf. $\frac{2}{3}$.

head about $\frac{1}{2}$ length of latter. Anal I 115–130. Caudal pointed, the tail strongly attenuate behind. Pectoral $\frac{1}{3}$ length of head. Scales extremely small, about 25 between origin of soft dorsal and lateral line. Pale olive-brown above, with roundish spots of a darker brown, white beneath ; dorsal and pectoral spotted with brown ; anal and caudal of a light orange colour, unspotted.

Total length 330 millim.

Lake Tanganyika.

1–5. Types.	Near Ujiji.	E. Coode Hore, Esq. (P.).
6. Ad.	Burton Gulf.	Dr. W. A. Cunnington (C.).

Suborder X. PLECTOGNATHI.

Air-bladder without open duct. Opercular bones more or less reduced; supraoccipital separating the parietals, in contact with the frontal; maxillary and præmaxillary bones often firmly united. No ribs. Pectoral arch suspended from the skull; no mesocoracoid. Ventral fins thoracic and much reduced, if present. Gill-opening much reduced. Body covered with more or less osseous scales, bony scutes, or spines, or naked.

Fam. 1. TETRODONTIDÆ.

Teeth coalescent, forming a beak, with a median suture. Interoperculum a long rod, attached to the inner face of the præoperculum, sometimes connected with the operculum. First four or five præcaudal vertebræ with bifid neural spine and closed neural arch. Supraclavicle oblique, sometimes nearly horizontal; lower three pectoral pterygials enlarged and immovably united to the coraco-scapular cartilage; upper pterygial small, suturally united to the scapula. No spinous dorsal fin. Pelvis absent. Gills three. Skin naked or with movable spines, rarely with bony plates; belly inflatable.

Seas of the tropical and warm parts of the World, a few species in fresh waters; the latter represented in Africa by two genera:—

Dorsal and anal with less than 20 rays . . . . 1. *Tetrodon*, L., p. 142.
Dorsal and anal with more than 20 rays . . . 2. *Chonerhinus*, Blkr., p. 148.

1. TETRODON.

Linn. Syst. Nat. i. p. 410 (1766), part.; Günth. Cat. Fish. viii. p. 271 (1870); Bouleng. Poiss. Bass. Congo, p. 502 (1901); Regan, Proc. Zool. Soc. 1902, p. 294; Bouleng. Fish. Nile, p. 543 (1907).

Skin smooth or prickly. Dorsal and anal fins short, with less than 20 rays. Vertebræ 17 to 22.

Four species in the fresh waters of Africa.

Synopsis of the Species.

I. Eyes lateral; caudal fin at least as long as or a little shorter than head.
A. Caudal rounded.
Caudal peduncle $1\frac{1}{4}$ to $1\frac{1}{2}$ times as long as deep . 1. *T. fahaka*, L., p. 143.
Caudal peduncle about twice as long as deep . . 2. *T. mbu*, Blgr., p. 145.
B. Caudal truncate . . . . . 3. *T. pustulatus*, A. Murray, [p. 146.
II. Eyes directed upwards; caudal fin $\frac{1}{2}$ or a little more than $\frac{1}{2}$ length of head . . . 4. *T. miurus*, Blgr., p. 147.

1. TETRODON FAHAKA.

Linn. in Hasselq. Reise Palæst. p. 441 (1762) ; Günth. Cat. Fish. viii. p. 290 (1870); Bouleng. Fish. Nile, p. 544, pl. xcvii. (1907); Pellegr. Poiss. Bass. Tchad, p. 140, fig. (1914).

Tetrodon lineatus, Linn. Syst. Nat. i. p. 411 (1766) ; Forsk. Descr. Anim. p. 76 (1775) ; Günth. Petherick's Trav. ii. p. 267 (1869).

Tetrodon physa, Geoffr. Descr. Egypte, Poiss. p. 19, pls. i. & ii. (1809) ; Joannis, Mag. Zool. 1835, iv. pl. ii.

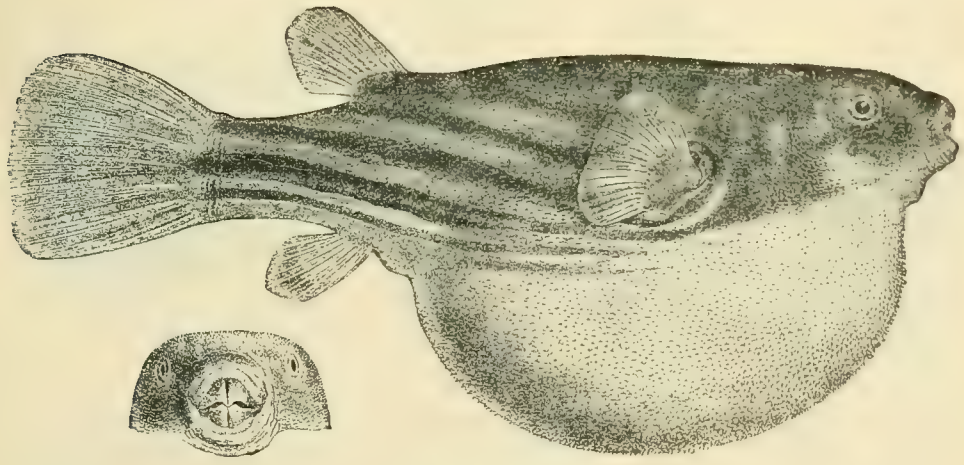
Bon Jérap, Rifaud, Voy. Egypte, pl. cxcix. (1830).

Tetrodon strigosus, Bennett, Proc. Zool. Soc. 1834, p. 46.

Crayracion fahaka, Steind. Sitzb. Ak. Wien, lxi. i. 1870, p. 572.

Head as long as broad or a little longer than broad, its length (to the gill-opening) 3 to $3\frac{1}{4}$ times in total length. Snout rounded, twice as

Fig. 97.



Tetrodon fahaka.
Khartum (F. N.). $\frac{1}{2}$.

long as eye, which is lateral and contained 6 to 7 times in length of head *; interorbital region feebly convex, 2 to $2\frac{1}{2}$ times in length of head ; no nostril, but two nasal tentacles on each side, measuring about $\frac{1}{2}$ diameter of eye. Dorsal rounded, 12–14. Anal rounded, 10–11, originating below middle of dorsal. Pectoral rounded-subtruncate, $\frac{2}{5}$ to $\frac{1}{2}$ length of head. Caudal rounded, as long as or a little longer than head. Caudal peduncle $\frac{1}{2}$ to $\frac{2}{3}$ length of head, $1\frac{1}{4}$ to $1\frac{1}{2}$ times as long as deep. Head and body with minute spines, except on snout, round

* Young specimens have the head and the eye much larger in proportion than the adult.

base of pectoral fin, and on caudal region; lateral-line system represented by very distinct furrows. Upper parts dark olive-grey, lower parts and dorsal, anal, and pectoral fins yellow; caudal dark olive, with a broad orange posterior border; black stripes along sides of body and caudal peduncle, converging towards their fellows on the back; usually three stripes below pectoral fin and three on each side of caudal peduncle; in some specimens the stripes are lost on the back, which is of a uniform blackish olive, or with roundish lighter spots; some specimens with dark vertical bars on the sides of the head; black stripes not so well defined in the young, or replaced by roundish spots.

Total length 430 millim.

Nile, Chad Basin, Senegambia, Niger.

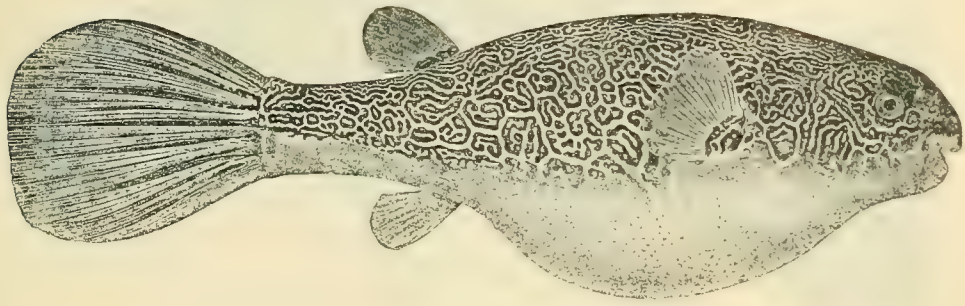
1–10. Hgr. & yg.	Fresh-water pool at Ghet-el-Nassara, L. Menzaleh.	L. Loat, Esq. (C.).
11. Skel.	Nile.	
12–15. Ad.	Rosetta Nile, downstream side of barrage.	L. Loat, Esq. (C.).
16. Yg.	Nile near Cairo.	Capt. S. Flower (P.).
17. Yg.	Near Luxor.	L. Loat, Esq. (C.).
18. Ad.	Abu Simbil, Nubia.	,,
19–20. Ad.	Khartum.	J. Petherick, Esq. (C.).
21. Yg.	Rosaires, Blue Nile.	Capt. S. Flower (P.).
22–24. Yg.	Goz-abu-Guma, White Nile.	L. Loat, Esq. (C.).
25–39, 40–41. Ad., hgr., & yg.	Fashoda, ,,	,,
42. Ad.	Polkom, Baro R., Sobat.	Mr. P. C. Zaphiro (C.); W. N. McMillan, Esq. (P.).
43–45. Ad.	Mouth of L. No.	L. Loat, Esq. (C.).
46–52. Ad.	Gondokoro.	,,
53–57. Hgr. & yg.	Fort Lamy, Shari R.	Capt. G. B. Gosling (P.).
58. Yg.	Yo R., L. Chad.	,,
59. Ad., stffd.	Senegal.	
60. Hgr.	Geba R., Portuguese Guinea.	Dr. W. J. Ansorge (C.).
61. Type of *T. strigosus*.	Niger.	Zoological Society (P.).
62. Ad.	,,	Mr. J. T. Dalton (C.).
63–64. Ad. & hgr.	Niger Delta.	Dr. W. H. Crosse (P.).
65. Skel.	W. Africa.	

2. TETRODON MBU.

Bouleng. Ann. Mus. Congo, Zool. i. p. 56, pl. xxix. (1899), Poiss. Bass. Congo, p. 503 (1901), and Ann. Mus. Congo, Zool. ii. pl. xv. fig. 5 (1902).

Head as long as broad or a little longer than broad, its length 3 to $3\frac{1}{2}$ times in total length. Snout rounded, $\frac{1}{3}$ or $\frac{2}{7}$ length of head; interorbital region feebly convex, $1\frac{1}{2}$ to 2 times in length of head; eye lateral, 4 (young) to 9 times in length of head; no nostril, but two nasal tentacles on each side, measuring $\frac{1}{3}$ to $\frac{2}{3}$ diameter of eye. Dorsal rounded, 11–12. Anal rounded, 10–11, opposite dorsal. Pectoral rounded-subtruncate, $\frac{2}{5}$ to $\frac{1}{2}$ length of head. Caudal rounded, as long as or longer than head. Caudal peduncle $\frac{1}{2}$ to $\frac{2}{3}$ length of head, about twice as long as deep. Head and body with minute spines, except on snout and on sides and lower surface of caudal region; lateral-line

Fig. 98.



Tetrodon mbu.
Type (A. M. C.). $\frac{1}{4}$.

system represented by very distinct furrows. Brownish above, with large black spots or marblings (young), or with black vermicular lines forming a handsome pattern; young with one or two black longitudinal bands on each side of the caudal peduncle; lower parts uniform yellow or orange; fins unspotted, or caudal with black longitudinal streaks.

Total length 670 millim.

Congo.—Types in Congo Museum, Tervueren.

1, 2. Types.	Umangi, Upper Congo.	Capt. Wilverth (C.).
3. Yg., type.	Monsembe, „	Rev. J. H. Weeks (P.).
4. Ad.	Stanley Falls, Upper Congo.	Dr. C. Christy (C.).
5–6. Hgr.	Upper Congo.	Brussels University.
7. Skel.	„	Rev. G. Grenfell (P.).
8–9. Hgr. & yg.	Sankuru R. at Kondue, Kasai.	M. E. Luja (C.); Luxemburg Museum (P.).

10. Yg.	Muskenge, Bakubu Country, Kasai.	E. Torday, Esq. (P.).
11. Yg.	Banzyville, Ubanghi.	Capt. Royaux (C.).
12. Yg.	Uerre R., Upper Ubanghi.	M. De Bauw (C.).

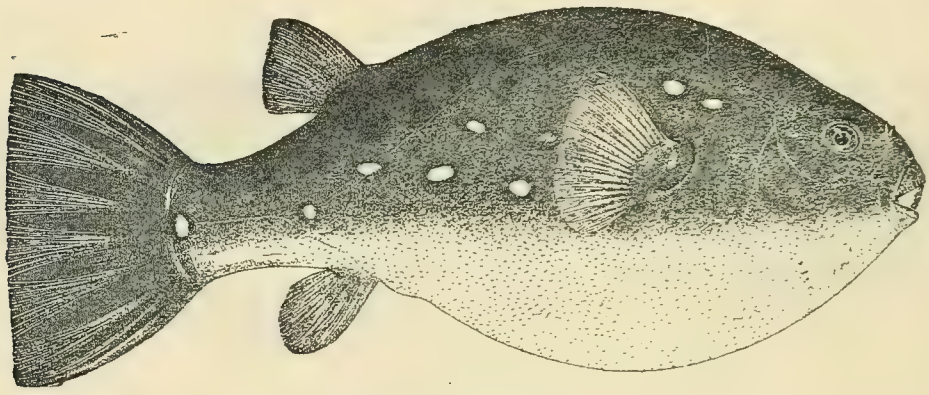
3. TETRODON PUSTULATUS.

A. Murray, Proc. R. Phys. Soc. Edinb. i. 1857, p. 253 ; Günth. Cat. Fish. viii. p. 261 (1870).

Tetraodon leiogaster, J. A. Smith, Proc. R. Phys. Soc. Edinb. iii. 1865, p. 268.

Head as long as broad or a little longer than broad, its length 3 to $3\frac{1}{4}$ times in total length. Snout rounded, $1\frac{1}{2}$ to $2\frac{1}{2}$ times as long as eye, which is lateral and $4\frac{1}{2}$ to 7 times in length of head ; interorbital

Fig. 99.



Tetrodon pustulatus.
Old Calabar. $\frac{1}{2}$.

region feebly convex, about $\frac{1}{2}$ length of head ; no nostril, but two nasal tentacles on each side, measuring about $\frac{1}{2}$ diameter of eye. Dorsal obtusely pointed, 11–12. Anal rounded or obtusely pointed, 9–10, opposite dorsal. Pectoral rounded-subtruncate, $\frac{2}{5}$ to $\frac{1}{2}$ length of head. Caudal truncate, as long as or a little shorter than head. Caudal peduncle $\frac{1}{2}$ to $\frac{2}{3}$ length of head, $1\frac{2}{3}$ to 2 times as long as deep. Head and body with minute spines, except on snout and on caudal region; lateral-line system represented by very distinct furrows. Brown above, with or without darker spots, and with red, black-edged ocelli, which may be numerous or few and confined to the sides ; fins and lower parts whitish.

Total length 340 millim.

Old Calabar, Gaboon.

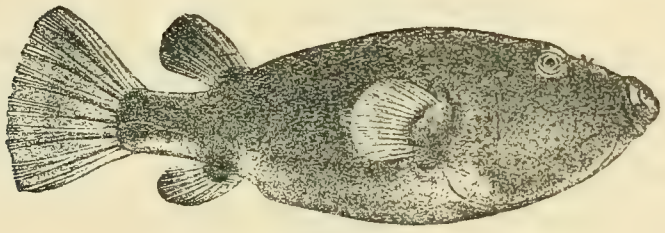
1–2. Types.	Old Calabar.	A. Murray, Esq. (P.).
3. Ad.	„	Miss Kingsley (C.).
4. Hgr.	Eloby, Gaboon.	H. Ansell, Esq. (P.).
5. Ad.	W. Africa.	
6. Skel.	„	

4. TETRODON MIURUS.

Bouleng. Ann. Mus. Congo, Zool. ii. p. 55, pl. xv. fig. 4 (1902).

Head as long as broad, its length $2\frac{1}{2}$ times in total length. Snout obtusely pointed, $2\frac{1}{2}$ to 3 times as long as eye, which is contained 6 or 7 times in length of head, and directed upwards; interorbital region flat or slightly concave, $2\frac{1}{2}$ to 3 times in length of head; no nostril, but two nasal tentacles on each side, not measuring more than $\frac{1}{2}$ diameter of eye. Dorsal rounded, 9–10. Anal rounded, 8–9, opposite dorsal.

Fig. 100.



Tetrodon miurus.
Type (A. M. C.).

Pectoral rounded-subtruncate, a little more than $\frac{1}{3}$ length of head. Caudal rounded, $\frac{1}{2}$, or a little more than $\frac{1}{2}$, length of head. Caudal peduncle little longer than deep, not more than $\frac{1}{2}$ length of head. Head and body with minute spines, except on snout and on caudal region; lateral-line system represented by very distinct furrows. Dark grey or brown above, dotted or spotted with black; fins and lower parts white.

Total length 100 millim.

Congo.—Types in Congo Museum, Tervueren.

1. One of the types.	Banzyville, Ubanghi.	Capt. Royaux (C.).
2. Ad.	Stanley Falls.	Dr. C. Christy (C.).
3. Skel.	„	„
4. Hgr.	Kinshassa, Stanley Pool.	M. A. Greshoff (C.); Utrecht University (E.).
5–6. Ad.	Sankuru R., at Kondue, Kasai.	M. E. Luja (C.); Luxemburg Museum (P.).

2. CHONERHINUS.

Bleek. Atlas Ichthyol. v. p. 77 (1865), part.; Regan, Proc. Zool. Soc. 1902, p. 294.

Xenopterus, part., Günth. Cat. Fish. viii. p. 270 (1870).

Distinguished from *Tetrodon* by the higher number of dorsal (25–26) and anal (23–25) rays. Vertebræ 24.

One species from the rivers of Sumatra and Borneo and one from the Congo.

1. CHONERHINUS AFRICANUS.

Bouleng. Cat. Poiss. Congo, Mus. Luxemb. p. 15 (1909).

Body strongly compressed, its depth twice in total length. Head $1\frac{1}{3}$ times as long as broad, 3 times in total length; snout rounded, as long as eye, 3 times in length of head; interorbital width half length of head; nostril funnel-shaped, with fringed margin. Dorsal 25, originating at equal distance from nostril and from root of caudal, its border convex, longest rays, in front, measuring $\frac{2}{3}$ length of head, its base equal to its distance from eye. Anal 23, similar to dorsal, but originating a little further back. Caudal feebly emarginate. Caudal peduncle as long as deep. Small spines, with bifid roots, on the belly. Uniform brownish.

Total length 65 millim.

Sankuru River, Kasai, Congo.—Type in Luxemburg Museum.

ADDENDA.

VOL. I.

Fam. PRISTIDÆ.

1. **PRISTIS**, Latr.

1. PRISTIS PERROTETI, M. & H.

Add:—

4. Hgr.	Geba R. at Bafata, Portug. Guinea.	Dr. W. J. Ansorge (C.).

Fam. POLYPTERIDÆ.

1. **POLYPTERUS**, Geoffr.

1. POLYPTERUS BICHIR, Geoffr.

Pellegr. Poiss. Bass. Tchad, p. 16, fig. (1914).

2. POLYPTERUS LAPRADII, Stdr.

Add:—

29–30. Ad.	Geba R. at Bafata, Portug. Guinea.	Dr. W. J. Ansorge (C.).
31. Yg.	Anambra R., Lower Niger.	W. J. Crocombe, Esq. (P.).

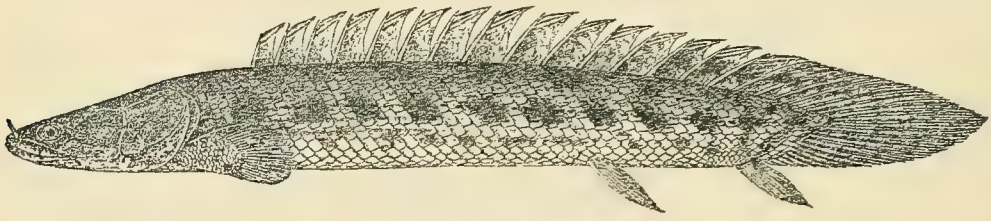
2 *a*. POLYPTERUS ANSORGII.

Bouleng. Ann. & Mag. N. H. (8) vi. 1910, p. 424.

Body as deep as broad in front. Head nearly twice as long as broad, 4 to $4\frac{1}{4}$ times in total length, much flattened, with supero-lateral eyes and flat interorbital region; jaws equal in front; length of snout 5 to $5\frac{1}{2}$ times in length of head; eye 8 times in length of head, $1\frac{1}{3}$ to $1\frac{1}{2}$ times in interocular width; latter less than distance between eye and spiracle; no azygous shield between the nasals; a series of 3 or 4 shields between

postorbital and spiracular shields; suboperculum not or but slightly larger than eye. Dorsal with XIII to XV spines, all strongly overlapping when folded. Anal 12–13. Pectoral reaching beyond vertical of first dorsal spine. 55–56 scales in a longitudinal series, 11–13 between occiput and first dorsal spine, 42–46 round middle of body.

Fig. 101.



Polypterus ansorgii.
Type. $\frac{5}{3}$.

Greyish brown above, with 7 or 8 black bars across the back, and a series of 11 to 13 squarish black spots along each side, with smaller and more irregular ones below; fins spotted and mottled with blackish.

Total length 205 millim.

Corbal River, Portuguese Guinea.

1. One of the types.	Tchitoli, Corbal R.	Dr. W. J. Ansorge (P.).

4. POLYPTERUS ENDLICHERI, Heck.

Add:—

17–18. Yg.	Anambra R., Lower Niger.	W. J. Crocombe, Esq. (P.).

8. POLYPTERUS SENEGALUS, Cuv.

Pellegr. Poiss. Bass. Tchad, p. 47, pl. ii. fig. 1 (1914).

Add:—

98–107. Yg.	Anambra R., Lower Niger.	W. J. Crocombe, Esq. (P.).

9. POLYPTERUS PALMAS, Ayres.

Add:—

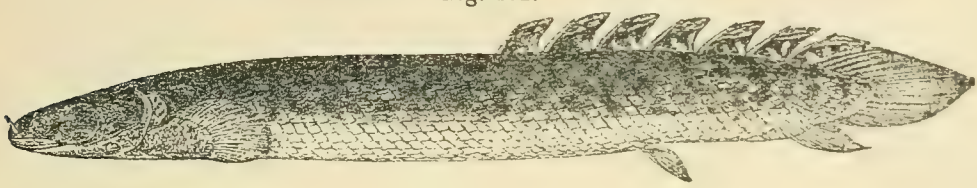
11–12. Yg.	R. Corbal, Portug. Guinea.	Dr. W. J. Ansorge (C.).
13. Yg.	Sierra Leone.	Liverpool School of Trop. Medicine (P.).
14. Ad.	Pujehun, Sierra Leone.	N. W. Thomas, Esq. (P.).

9 *a*. POLYPTERUS LOWEI.

Bouleng. Ann. & Mag. N. H. (8) vii. 1911, p. 377 ; Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 2.

Body subcylindrical. Head $1\frac{2}{3}$ to $1\frac{3}{4}$ times as long as broad, 6 times in total length, with lateral eyes and convex interorbital region ; sn out projecting beyond lower jaw ; eye 7 to 9 times in length of head, 2 to $2\frac{1}{2}$

Fig. 102.



Polypterus lowei.
Type. $\frac{5}{9}$.

times in interorbital width ; head-shields all paired ; suboperculum a little smaller than eye. Dorsal with VII–IX spines, anterior widely separated when folded. Anal 12–13. Pectoral widely separated from first dorsal spine. 55–60 scales in a longitudinal series, 30–33 between occiput and first dorsal spine, 36–38 round middle of body. Dark olive above, yellow beneath, back and sides spotted or marbled with blackish ; no large black spot on the muscular part of the pectoral fin.

Total length 223 millim.

Liberia ; South Cameroon (Ja River).

1–4. Types.	Nanna Kru, Liberia.	W. P. Lowe, Esq. (C.).

2. **CALAMICHTHYS**, J. A. Smith.

1. CALAMICHTHYS CALABARICUS, J. A. Smith.

Add :—

14. Ad.	S. Nigeria.	G. K. Marshall, Esq. (P.).

Fam. LEPIDOSIRENIDÆ.

1. **PROTOPTERUS**, Owen.

1. PROTOPTERUS ANNECTENS, Owen.

Pellegr. Poiss. Bass. Tchad, p. 44, fig. (1914).

Add :—

33. Ad.	Kana, Hadeija R., Chad Basin.	Capt. G. B. Gosling (P.).
34. Hgr.	12 m. N. of Lasamis, Uganda.	Sir F. J. Jackson (P.).

2. PROTOPTERUS ÆTHIOPICUS, Heck.

Add:—

21. Hgr.	Ptologoma, Uganda.	Dr. E. Bayon (C.); Genoa Museum (P.).
22–28. Yg.	L. Gangu, E. of L. Victoria.	C. M. Woodhouse, Esq. (P.).
29. Ad.	L. No, White Nile.	W. P. Lowe, Esq. (C.).

3. PROTOPTERUS DOLLOI, Blgr.

Boulenger, Ann. Mus. Congo, Zool. ii. 3, p. 5 (1912).

Add:—

6. Skel.	Lower Congo.	Capt. Wilverth (P.).
7–8. Hgr. & yg.	Luali R. at Lundo, Lower Congo.	Dr. W. J. Ansorge (C.).

Fam. ELOPIDÆ.

1. **ELOPS**, L.

1. ELOPS SAURUS, L.

Specs. 1–3 are the types of *Elops senegalensis*, Regan, Ann. & Mag. N. H. (8) iii. 1909, p. 38.

The other specimens are referred to *E. machnata*, Forsk., which is also distinct from *E. saurus*.

2. ELOPS LACERTA, C. & V.

Add:—

11. Ad.	Chiloango R. at Mayili.	Dr. W. J. Ansorge (C.).
12–13. Ad.	Lagos.	J. Cadman, Esq. (P.).

Fam. MORMYRIDÆ.

1. **MORMYROPS**, J. Müll.

1. MORMYROPS DELICIOSUS, Leach.

Keilhack, Mitth. Zool. Mus. Berl. v. 1910, p. 92.

Add:—

33. Hgr.	Ogun R. at Aro, Lagos.	Major G. E. Bruce (P.).
34. Hgr.	Eusso Nyiro, Brit. E. Africa.	A. B. Percival, Esq. (P.).

1*a*. MORMYROPS CITERNII.

Vincig. Ann. Mus. Genova, (3) v. 1913, p. 295.

Depth of body 8 times in total length, length of head a little more than 4 times. Head $2\frac{1}{3}$ times as long as deep; snout rounded; jaws equal; eye 14 times in length of head; teeth truncate, 22 in each jaw. Dorsal 22, originating above 10th ray of anal, ending above 28th. Anal 36. Caudal peduncle twice as long as deep. Greenish grey, darker above.

Total length 355 millim. (without caudal).

Upper Ganale R. (Juba R. System), Somaliland.—Type in Genoa Museum.

4. MORMYROPS BREVICEPS, Stdr.

Add:—

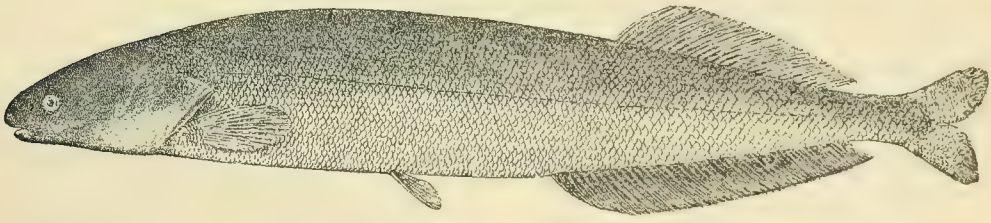
1. Ad.	Geba R. at Bafata, Portug. Guinea.	Dr. W. J. Ansorge (C.).
2–3. Ad.	Culufi R. above Bafata, „	„

5. MORMYROPS ENGYSTOMA, Blgr.

Pellegr. Poiss. Bass. Tchad, p. 49, pl. ii. fig. 2 (1914).

Add Shari River to habitat.

Fig. 103.



Mormyrops batesianus.
Type. $\frac{5}{12}$.

7*a*. MORMYROPS BATESIANUS.

Bouleng. Ann. & Mag. N. H. (8) iv. 1909, p. 186.

Depth of body 6 times in total length, length of head 5 times. Head $1\frac{1}{2}$ times as long as deep, with curved upper profile; snout rounded, projecting a little beyond mouth; width of mouth a little greater than length of snout; teeth truncate, 16 in upper jaw, 18 in

lower; eye in anterior third of head, its diameter $2\frac{1}{2}$ times in length of snout or interorbital width. Dorsal 30, $\frac{4}{5}$ length of anal, originating nearly twice as far from end of snout as from base of caudal. Anal 45, originating a little in advance of dorsal (8th ray corresponding to first dorsal). Pectoral $\frac{1}{2}$ length of head. Caudal rather small, densely scaled, with rounded lobes. Caudal peduncle twice as long as deep, $\frac{1}{2}$ length of head. 102 scales in lateral line, $\frac{18}{19}$ in transverse series on body, 25 in transverse series between dorsal and anal, 18 round caudal peduncle. Uniform dark brown above, a little lighter beneath.

Total length 280 millim.

South Cameroon.

1. Type.	Assobam, Bumba R.	G. L. Bates, Esq. (C.).

9. MORMYROPS ZANCLIROSTRIS, Gthr.

Add:—

6. Ad.	Mouth of Congo.	Brussels Museum (P.).

10. MORMYROPS BOULENGERI, Pellegr.

Pappenh. Mitth. Zool. Mus. Berl. v. 1911, p. 507.

2. PETROCEPHALUS, Marcus.

1. PETROCEPHALUS BANE, Lacep.

Pellegr. Poiss. Bass. Tchad, p. 50, pl. ii. fig. 5 (1914).

2. PETROCEPHALUS SAUVAGII, Blgr.

Add:—

15. Ad.	Brazzaville, Stanley Pool.	Paris Museum (E.).

3. PETROCEPHALUS ANSORGII, Blgr.

Add:—

2–3. Ad.	Kiva R., Lower Niger.	H. J. Bowker-Booker, Esq. (P.).
4–5. Ad.	Creek near Badagry, W. of Lagos.	Major G. E. Bruce (P.).

4. PETROCEPHALUS BALLAYI, Sauv.

Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 2, fig.

Add:—

5. Ad.	Ngomo, Ogowe.	Rev. E. Haug (C.); Paris Museum (E.).

4 *a*. PETROCEPHALUS MICROPHTHALMUS.

Pellegr. Bull. Soc. Philom. (9) x. 1908, p. 2.

Depth of body $2\frac{3}{4}$ times in total length, length of head 4 times. Head as long as deep, with convex upper profile; snout $\frac{1}{4}$ length of head, rounded, projecting beyond mouth; mouth below eye, its width $\frac{1}{4}$ length of head; about 10 teeth in upper jaw, 20 in lower; eye 5 times in length of head, $2\frac{1}{2}$ times in interorbital width. Dorsal 19, originating above 10th ray of anal, its length less than half its distance from head. Anal 28, nearly equally distant from base of ventral and from caudal. Pectoral $\frac{2}{3}$ length of head, reaching ventral. Caudal scaled at the base, with pointed lobes. Caudal peduncle 3 times as long as deep, $\frac{4}{5}$ length of head. 35 scales in lateral line, $\frac{7}{7}$ between dorsal and anal, 10 round caudal peduncle. Silvery, olive-brown above; dorsal and anal blackish anteriorly.

Total length 95 millim.

Ogowe.—Type in Paris Museum.

Intermediate between *P. ballayi* and *P. simus*.

5. PETROCEPHALUS SIMUS, Sauv.

Add:—

19–21. Ad.	Bumba R. at Assobam, S. Cameroon.	G. L. Bates, Esq. (C.).
22. Ad.	Ngomo, Ogowe.	Rev. E. Haug (C.); Paris Museum (E.).
23–26. Ad., hgr., & yg.	Quanza R. at Cunga, Angola.	Dr. W. J. Ansorge (C.).
27–31. Ad. & hgr.	Lucalla R. at Kelange, „	Dr. W. J. Ansorge (C.).
32. Hgr.	Oyan R., Niger.	A. E. Kitson, Esq. (P.).
33–35. Ad. & hgr.	Geba R. above Bafata, Portug. Guinea.	Dr. W. J. Ansorge (C.).
36. Hgr.	N. Sherbo district, Sierra Leone.	N. W. Thomas, Esq. (P.).

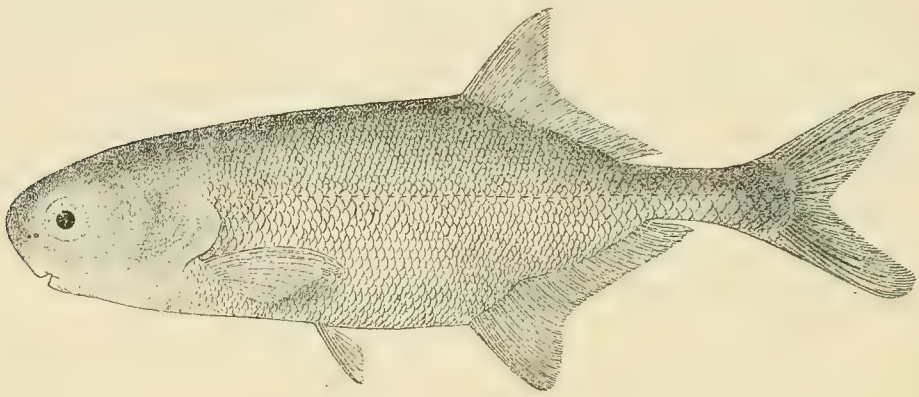
5 *a*. PETROCEPHALUS CUNGANUS.

Bouleng. Ann. & Mag. N. H. (8) vi. 1910, p. 539.

Depth of body equal to length of head, $3\frac{1}{2}$ times in total length. Head slightly longer than deep, with convex upper profile; snout rounded, strongly projecting beyond mouth, $\frac{1}{5}$ length of head; mouth

below anterior border of eye; its width $\frac{1}{4}$ length of head; teeth bicuspid, 11 in upper jaw, 24 in lower; nostrils near lower border of eye; eye $\frac{1}{4}$ length of head, $\frac{2}{3}$ interorbital width. Dorsal 27, originating above first ray of anal; its length $1\frac{1}{2}$ times in its distance from head and a little greater than its distance from caudal. Anal 32, equally distant from base of ventral and from base of caudal. Pectoral pointed, $\frac{2}{3}$ length of head, not quite twice as long as ventral, extending beyond base of latter. Caudal scaled at the base, upper lobe pointed,

Fig. 104.



Petrocephalus cunganus.
Type.

lower rounded. Caudal peduncle 3 times as long as deep, $\frac{3}{4}$ length of head. 47 scales in lateral line, $\frac{12}{14}$ in transverse series on body, $\frac{16}{14}$ between dorsal and anal, 12 round caudal peduncle. Brown above, silvery beneath; fins brownish.

Total length 110 millim.

Angola.

1. Type. Quanza R. at Cunga. Dr. W. J. Ansorge (C.).

Near *P. simus*, but agreeing with *P. degeni* in the anal not originating in front of the dorsal, and in the more elongate body.

8. PETROCEPHALUS STUHLMANNI, Blgr.

Add:—

2. Hgr. Kafue R., Zambesi. Dr. J. D. F. Gilchrist (P.).

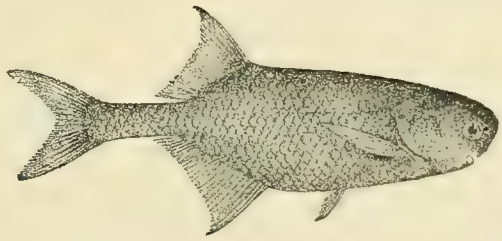
The species is also recorded from Leydsdorp, Transvaal, by Gilchrist and Thompson, Ann. S. Afr. Mus. xi. 1913, p. 326.

8 *a*. PETROCEPHALUS HAULLEVILLII.

Bouleng. Ann. Mus. Congo, Zool. ii. 3, p. 5, pl. xvii. fig. 1 (1912).

Depth of body 3 to $3\frac{1}{2}$ times in total length, length of head $3\frac{2}{3}$ to $4\frac{1}{4}$ times. Head as long as deep; snout rounded, strongly projecting beyond mouth, as long as eye, which is 4 to 5 times in length of head, and nearly $\frac{1}{2}$ interorbital width; width of mouth three times in length of head; teeth bicuspid, 11 to 14 in upper jaw, 16 to 18 in lower; nostril near lower border of eye. Dorsal 18–20, about $\frac{1}{2}$ as long as its distance from head. Anal 27–29, originating well in advance of dorsal. Pectoral pointed, a little shorter than head, extending beyond base of

Fig. 105.



Petrocephalus haullevillii. $\frac{8}{9}$.
Type. (A. M. C.)

ventral. Caudal scaled at the base, with pointed lobes. Caudal peduncle 3 times as long as deep, nearly as long as head. 32–35 scales in lateral line, $\frac{7-8}{10-12}$ in transverse series on body, $\frac{7-8}{8\ 9}$ between dorsal and anal, 12 round caudal peduncle. Silvery, speckled with black, the specks more crowded on the head and back; dorsal and anal whitish, brown anteriorly.

Total length 70 millim.

Chiloango River, Lower Congo.

1–3. Types.	Chiloango R. at Mayili.	Dr. W. J. Ansorge (C.).
4–6. Types.	Luculla R., Chiloango.	,,
7–8. Types.	Luali R., ,,	,,

Distinguished from *P. stuhlmanni* by fewer teeth and a more slender and longer caudal peduncle.

3. ISICHTHYS, Gill.

1. ISICHTHYS HENRYI, Gill.

Add:—

12–13. Hgr.	N. Sherbo district, Sierra Leone.	N. W. Thomas, Esq. (P.).

4. MARCUSENIUS, Gill.

4. MARCUSENIUS KINGSLEYÆ, Gthr.

Add:—

11–12. Ad.	Bumba R. at Assobam, S. Cameroon.	G. L. Bates, Esq. (C.).
13–15. Ad. & yg.	Luali R. at Lundo, Chiloango.	Dr. W. J. Ansorge (C.).

5*a*. MARCUSENIUS PAPPENHEIMI.

Bouleng. Ann. & Mag. N. H. (8) vi. 1910, p. 540.

Depth of body $3\frac{2}{3}$ to 4 times in total length, length of head 4 to $4\frac{3}{4}$ times. Head slightly longer than deep; snout rounded, $\frac{1}{4}$ length of head, slightly projecting beyond mouth; mouth small, subinferior, its width $\frac{1}{3}$ to $\frac{1}{4}$ length of head; teeth notched, 5 to 7 in upper jaw, 6 or 8 in lower; posterior nostril a little below level of centre of eye; eye about $\frac{2}{3}$ length of snout and $\frac{1}{2}$ interorbital width. Dorsal 20–22, its length about $\frac{1}{2}$ its distance from head, originating above 4th to 6th ray of anal. Anal 25–28, a little longer than dorsal, nearly equally distant from base of ventral and from base of caudal. Pectoral pointed, $\frac{3}{4}$ to $\frac{4}{5}$ length of head, reaching base of ventral. Caudal densely scaled in the basal half, with obtusely pointed lobes. Caudal peduncle 3 to $3\frac{1}{2}$ times as long as deep, as long as head. 71–80 scales in lateral line, $\frac{14-16}{21-24}$ in transverse series on body, $\frac{11-13}{11-13}$ in transverse series between dorsal and anal, 12–14 round caudal peduncle. Brown; a more or less indistinct dark vertical bar between anterior part of dorsal and anal.

Total length 180 millim.

Angola.

1–10. Types.	Quanza R. at Cunga.	Dr. W. J. Ansorge (C.).

6. MARCUSENIUS BRACHISTIUS, Gill.

Add:—

21–23. Hgr.	Ataiyo R. at Oban, S. Nigeria.	P. A. Talbot, Esq. (P.).
24. Ad.	Ngomo, Ogowe.	Rev. E. Haug (C.); Paris Museum (E.).
25–33. Ad., hgr., & yg.	Nanna Kru, Liberia.	W. P. Lowe, Esq. (C.).
34. Skel.	,, ,,	,,
35. Ad.	Loango R. at Mayili.	Dr. W. J. Ansorge (C.).

36. Ad.	Loango R. at N'Kutu.	Dr. W. J. Ansorge (C.).
37–38. Ad	Luali R. (Chiloango) at Lundo.	,,
39. Ad.	Lebuzi R. (Chiloango) at Kuka Muno.	,,
40. Ad.	Luculla R. (Chiloango).	,,
41. Yg.	Pujehun, Sierra Leone.	N. W. Thomas, Esq. (P.).

7. MARCUSENIUS LONGIANALIS, Blgr.

Add :—

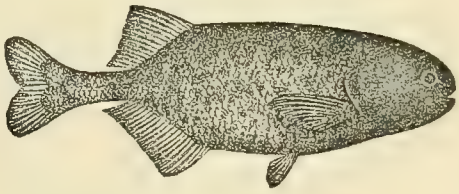
5, 6. Hgr.	Niger Delta.	Mr. J. Paul Arnold (P.).
7. Ad.	Kribi R. at Kribi, S. Cameroon.	G. L. Bates, Esq. (C.).

8*a*. MARCUSENIUS CASTELNAUI.

Boulenq. Tr. Zool. Soc. xviii. 1911, p. 402, pl. xxxviii. fig. 1.

Depth of body 3 times in total length, length of head $3\frac{2}{3}$ times. Head as long as deep, twice as long as broad; snout rounded, $\frac{1}{5}$ length of head, projecting very slightly beyond mouth; mouth small, well below level of lower border of eye; teeth small, notched, 7 in upper jaw, 8 in lower; eye rather indistinctly defined, nearly as long as snout,

Fig. 106.



Marcusenius castelnaui.
Type (Tr. Z. S. 1911). $\frac{5}{6}$.

its diameter not $\frac{1}{2}$ interocular width; posterior nostril a little lower down than upper, close to eye. Dorsal 17, originating above 4th ray of anal, its length $\frac{1}{2}$ its distance from head, upper border slightly convex in front, longest ray $\frac{3}{5}$ length of head. Anal 23, equally distant from base of ventrals and from base of caudal. Pectoral pointed, a little shorter than head, twice as long as ventral, extending to middle of latter. Caudal with rather short rounded lobes. Caudal peduncle $2\frac{1}{2}$ times as long as deep, a little shorter than head. 48–50 scales in lateral line, $\frac{10\text{-}11}{14\text{–}15}$ in transverse series on body, $\frac{8}{7}$ in transverse series between dorsal and anal, 12 round caudal peduncle. Pale brownish,

darker on the back, spotted and marbled with dark brown; fins brown.

Total length 70 millim.

Lake Ngami Basin, Bechuanaland.

1–2. Types. Okovango R. R. B. Woosnam, Esq. (C.).

Distinguished from *M. lhuysii* by the lower number of dorsal and anal fin-rays.

8 *b*. MARCUSENIUS BREVIS.

Bouleng. Rev. Zool. Afr. ii. 1913, p. 156.

Depth of body $2\frac{3}{4}$ to 3 times in total length, length of head $3\frac{1}{2}$ to $3\frac{2}{3}$ times. Head as long as deep; snout rounded, $\frac{1}{5}$ length of head, projecting a little beyond mouth; mouth small, well below level of lower border of eye; teeth moderate, notched, 7 in upper jaw, 8 in lower; eye as long as snout, its diameter not quite $\frac{1}{2}$ interocular width; posterior nostril a little lower down than upper, close to eye. Dorsal 19, originating above 4th or 5th ray of anal, its length $\frac{1}{2}$ its distance from head. Anal 24–26, nearer caudal than base of ventral. Pectoral a little shorter than head, not reaching extremity of ventral. Caudal with pointed lobes. Caudal peduncle twice as long as deep, $\frac{2}{3}$ length of head. 42–44 scales in lateral line, $\frac{7-8}{10-11}$ in transverse series on body, $\frac{8}{7}$ in transverse series between dorsal and anal, 12 round caudal peduncle. Brownish, head darker, with dark dots and irregular spots.

Total length 60 millim.

Uellé, Upper Congo.—Type in Congo Museum, Tervueren.

1. One of the types. Dungu, Upper Uellé. Capt. Hutereau (C.).

Distinguished from *M. lhuysii* by the lower number of scales in the lateral line.

9 *a*. MARCUSENIUS HUTEREAUI.

Bouleng. Rev. Zool. Afr. ii. 1913, p. 155.

Depth of body 3 times in total length, length of head 4 times. Head as long as deep; snout very short, rounded, strongly projecting beyond the mouth, which is situated below the eye; width of mouth $3\frac{1}{2}$ times in length of head; teeth very small, bicuspid, 7 in upper jaw, 8 in lower; nostrils on a line with centre of eye, posterior nearly touching eye, which is longer than snout, $4\frac{1}{2}$ times in length of head, and $1\frac{1}{2}$ times in interocular width. Dorsal 19, originating above 10th ray of anal, its base

$\frac{1}{2}$ its distance from head. Anal 27, equally distant from base of ventrals and from caudal. Pectoral as long as head, not quite reaching extremity of ventral. Caudal with pointed lobes. Caudal peduncle 3 times as long as deep, as long as head. 35 scales in lateral line, $\frac{8}{9}$ in transverse series on body, $\frac{8}{7}$ in transverse series between dorsal and anal, 12 round caudal peduncle. Body and fins brown, dotted with blackish.

Total length 60 millim.

Uellé, Upper Congo.—Type in Congo Museum, Tervueren.

Distinguished from *M. adspersus* by the more inferior mouth and the lower number of scales in the lateral line.

12. MARCUSENIUS ANSORGII, Blgr.

Add:—

3–4. Ad.	Lucalla R. at Kalenge.	Dr. W. J. Ansorge (C.).
5–7. Hgr. & yg.	Quanza R. at Dondo.	,,
8–10. Yg.	Lucalla R. at Lucalla.	,,

13. MARCUSENIUS PAUCIRADIATUS, Stdr.

Add:—

1. Ad.	Bengo R. at Cabiri.	Dr. W. J. Ansorge (C.).

14. MARCUSENIUS NIGRICANS, Blgr.

Add:—

10–11. Ad.	L. Gangu, E. of L. Victoria.	C. M. Woodhouse, Esq. (P.).
12. Ad.	Kirimia R., Semliki Valley, 2800 ft.	Sir F. J. Jackson (P.).
13. Ad.	L. Kasumu, Port Florence, L. Victoria.	,,

15. MARCUSENIUS ISIDORI, C. & V.

Recorded from the Kafue River, Upper Zambesi, by Gilchrist and Thompson, Ann. S. Afr. Mus. xi. 1913, p. 328.

15 *a*. MARCUSENIUS GAILLARDI.

Pellegr. Bull. Mus. Paris, 1909, p. 242, and Poiss. Bass. Tchad, p. 51, pl. i. fig. 2 (1914).

Depth of body 3 to $3\frac{1}{2}$ times in total length, length of head $3\frac{1}{2}$ to 4 times. Head slightly longer than deep; snout rounded, as long as or a little longer than eye, which is $4\frac{1}{2}$ times in length of head and twice in

interocular width; mouth small, below level of lower border of eye, its width 4 times in length of head; teeth strongly notched, 7 in each jaw; anterior nostril on a level with centre of eye, lower a little lower down and close to eye. Dorsal 18–20, originating above 2nd to 5th ray of anal, its base equal to caudal peduncle. Anal 22–25, equally distant from base of ventrals and from base of caudal. Pectoral pointed, nearly as long as head, usually reaching extremity of ventral. Caudal with rounded lobes. Caudal peduncle $2\frac{1}{2}$ times as long as deep. 48–50 scales in lateral line, $\frac{10-12}{15-17}$ in transverse series on body, 16 round caudal peduncle. Yellowish grey, speckled with black.

Total length 83 millim.

Lake Chad.—Types in Paris Museum.

Intermediate between *M. lhuysii* and *M. isidori*.

20. MARCUSENIUS DISCORHYNCHUS, Peters.

Keilhack, Mitth. Zool. Mus. Berl. v. 1910, p. 92.

Add:—

5–7. Hgr.	Lake Bangwelu.	F. H. Melland, Esq. (P.).
8–9. Hgr.	Nyassaland.	A. R. Andrew, Esq. (P.).

21. MARCUSENIUS PETHERICI, Blgr.

Add:—

10. Hgr.	Victoria Nile between L. Kioja and Murchison Falls.	F. H. Melland, Esq. (P.)

5. **STOMATORHINUS**, Blgr.

1. STOMATORHINUS PUNCTICULATUS, Blgr.

Add:—

3. Ad.	Boma.	Mr. J. Paul Arnold (P.).

6. STOMATORHINUS MICROPS, Blgr.

Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 4.

6. **MYOMYRUS**, Blgr.

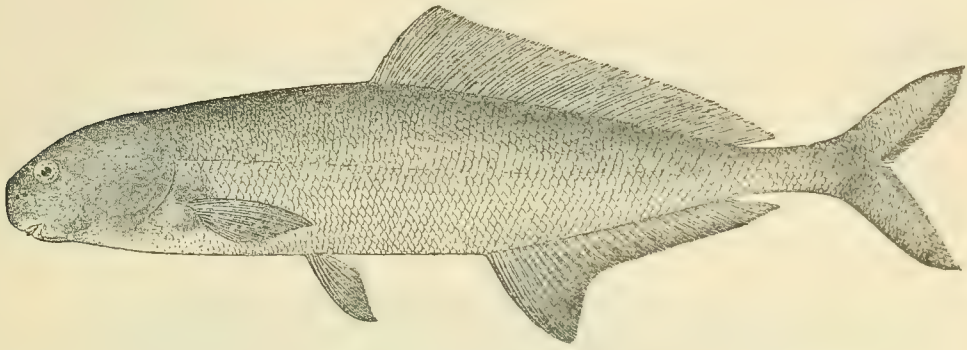
1*a*. MYOMYRUS MACROPS.

Bouleng. Ann. & Mag. N. H. (8) xiv. 1914, p. 383.

Depth of body $4\frac{2}{3}$ to $5\frac{1}{2}$ times in total length, length of head $4\frac{2}{3}$ to 5 times. Head $1\frac{1}{6}$ to $1\frac{1}{4}$ times as long as deep, with convex upper

profile; snout $\frac{1}{4}$ to $\frac{2}{9}$ length of head, strongly projecting beyond mouth; mouth small, its width $\frac{1}{6}$ to $\frac{1}{5}$ length of head; nostrils below level of eye, equally distant from latter and from end of snout; eye rather large, $\frac{2}{3}$ length of snout or interorbital width. Dorsal 40–42, as long as its distance from the end of the snout. Anal 26–29, originating below 13th or 14th ray of dorsal. Pectoral $\frac{2}{3}$ to $\frac{3}{4}$ length of head, reaching base of ventral. Caudal scaly, with obtuse lobes. Caudal peduncle $2\frac{1}{2}$ to 3 times as long as deep, $\frac{3}{5}$ to $\frac{2}{3}$ length of head. 82–87 scales in

Fig. 107.



Myomyrus macrops.
Type. $\frac{1}{2}$.

lateral line, $\frac{14-15}{20-23}$ in transverse series on body, $\frac{10-13}{12-13}$ in transverse series between dorsal and anal, 16 round caudal peduncle. Dark brown, a little lighter beneath.

Total length 250 mm.

South Cameroon (Congo System).

1–3. Types.	Ja R.	G. L. Bates, Esq. (C.).
4. Type.	Bumba R., trib. of Ja R.	,,

Distinguished from *M. macrodon* by the larger eye and the larger scales.

7. GNATHONEMUS, Gill.

1. GNATHONEMUS MOORII, Gthr.

Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 5.

Add :—

23. Hgr.	Ngomo, Ogowe.	Rev. E. Haug (C.); Paris Museum (E.).
24. Ad.	Chiloanno R. at Lella.	Dr. W. J. Ansorge (C.).
25. Ad.	,, Mayili.	,,

26–27. Ad. & hgr.	Loango R. at N'Kutu.	Dr. W. J. Ansorge (C.).
28. Ad.	Luali R. at Buco Zau.	,,
29. Hgr.	,, Lundo.	,,
30–31. Ad.	Luculla R.	,,
32. Ad.	Lucola R. near Cabinda.	,,
33. Ad.	Akonolinga, Nyong R., S. Cameroon.	G. L. Bates, Esq. (C.).

4. GNATHONEMUS PETERSII, Gthr.

Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 5.

Add :—

11–13. Ad.	Bumba R. at Assobam, S. Cameroon.	G. L. Bates, Esq. (C.).
14–16. Ad.	Keva R., Lower Niger.	H. J. Bowker-Booker, Esq. (P.).
17–18, 19. Hgr. & yg.	Sankuru R. at Kondue, Kasai.	M. E. Luja (C.) ; Luxemburg Museum (P.).

5. GNATHONEMUS LONGIBARBIS, Hilg.

Add :—

8–10. Hgr.	Victoria Nile, between L. Kioja and Murchison Falls.	F. H. Melland, Esq. (P.).

7. GNATHONEMUS LEOPOLDIANUS, Blgr.

Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 6.

12. GNATHONEMUS MONTEIRI, Gthr.

Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 7.

13. GNATHONEMUS MENTO, Blgr.

Add :—

2. Ad.	Culufi R. above Bafata, Portug. Guinea.	Dr. W. J. Ansorge (C.).
3. Ad.	Gam Bessar, Corbal R., Portug. Guinea.	,,
4. Hgr.	N. Sherbo district, Sierra Leone.	N. W. Thomas, Esq. (P.).

13 *a*. GNATHONEMUS THOMASI, sp. n.

Depth of body $3\frac{3}{4}$ times in total length, length of head 5 times. Head as long as deep, with strongly curved upper profile ; snout $\frac{1}{4}$ length of head ; a strong mental swelling ; teeth notched, 5 in upper jaw,

6 in lower; eye a little longer than snout, a little shorter than interorbital width. Dorsal 24, originating above 13th ray of anal, its length $\frac{1}{2}$ that of anal, $\frac{2}{5}$ its distance from head. Anal 41. Pectoral as long as head. Ventrals absent *. Caudal deeply forked, with pointed lobes. Caudal peduncle 4 times as long as deep, as long as head. 85 scales in lateral line, $\frac{18}{22}$ in transverse series on body, $\frac{15}{13}$ in transverse series between dorsal and anal, 12 round caudal peduncle. Brown, head darker; dorsal and anal fins dark brown in front.

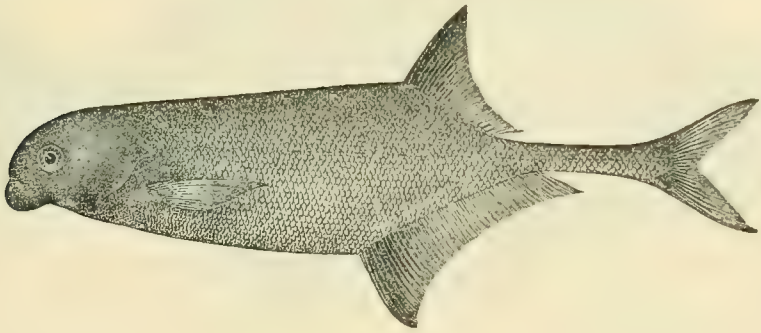
Total length 90 millim.

Sierra Leone.

1. Type. N. Sherbo district. N. W. Thomas, Esq. (P.).

Distinguished from *G. mento* by the shorter dorsal fin and the longer anal.

Fig. 108.



Gnathonemus thomasi.
Type.

14. GNATHONEMUS STANLEYANUS, Blgr.

Add :—

7. Ad. Sankuru R. at Kondue, Kasai. M. E. Luja (C.) ; Luxemburg Museum (P.).

15. GNATHONEMUS SENEGALENSIS, Stdr.

Pellegr. Poiss. Bass. Tchad, p. 53, pl. ii. fig. 4 (1914).

Add :—

11. Hgr. Oyan R., Niger. A. E. Kitson, Esq. (P.).

16. GNATHONEMUS ANGOLENSIS, Blgr.

Recorded from the Upper Zambesi by Pellegrin, Bull. Soc. Zool. France, xxxix. 1914, p. 24.

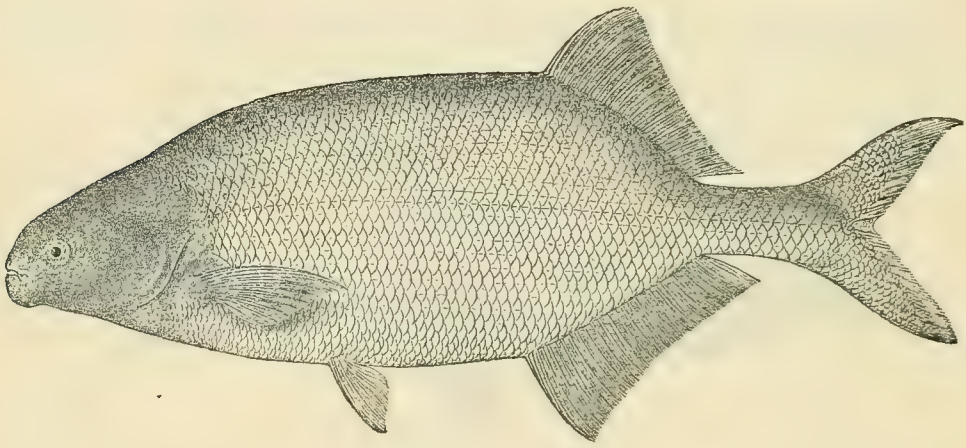
* No doubt a congenital malformation.

16*a*. GNATHONEMUS BRUCII.

Bouleng. Ann. & Mag. N. H. (8) vi. 1910, p. 425.

Depth of body 3 times in total length, length of head $4\frac{1}{2}$ times. Head as long as deep, with curved upper profile; snout $\frac{1}{4}$ length of head; teeth conical, 5 in upper jaw, 6 in lower; chin with feeble globular swelling; eye $\frac{2}{3}$ length of snout, $\frac{1}{2}$ interorbital width. Dorsal 25, originating above 5th ray of anal, its length $\frac{1}{2}$ its distance from head. Anal 30, nearer base of caudal than base of ventral.

Fig. 109.



Gnathonemus brucii.
Type. $\frac{5}{6}$.

Pectoral pointed, a little shorter than head, extending to base of ventral. Caudal $\frac{3}{5}$ scaled, with moderately long pointed lobes. Caudal peduncle twice as long as deep. 60 scales in lateral line, $\frac{15}{18}$ in transverse series on body, $\frac{11}{10}$ in transverse series between dorsal and anal, 12 round caudal peduncle. Brown (dirty greenish in life), darker above, paler beneath; fins dark brown.

Total length 150 millim.

Ogun River, interior of Lagos.

1. Type. Ogun R. at Aro. Major G. E. Bruce (P.).

Distinguished from *G. angolensis* by a smaller eye, a higher number of scales above the lateral line, and a less slender caudal peduncle.

17. GNATHONEMUS CYPRINOIDES, L.

Pellegr. Poiss. Bass. Tchad, p. 54, pl. ii. fig. 3 (1914).

18. GNATHONEMUS MACROLEPIDOTUS, Peters.

Add :—

7. Yg.	Umsitu R., Broken Hill, Zambesi.	Rev. F. A. Rogers and E. C. Chubb, Esq. (C.).
8–17. Ad. & hgr.	Okovango R., L. Ngami basin.	R. B. Woosnam, Esq. (C.).
18–20. Ad.	L. Bangwelu.	F. H. Melland, Esq. (P.).

Recorded from the Transvaal by Gilchrist and Thompson, Ann. S. Afr. Mus. xi. 1913, p. 331.

25. GNATHONEMUS TAMANDUA, Gthr.

Pellegr. Poiss. Bass. Tchad, p. 55, pl. iii. fig. 1 (1914).

26. GNATHONEMUS MIRUS, Blgr.

Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 8, pl. i. fig. 1.

8. **GENYOMYRUS**, Blgr.

1. GENYOMYRUS DONNYI, Blgr.

Add :—

10. Yg.	Sankuru R. at Kondue, Kasai.	M. E. Luja (C.); Luxemburg Museum (P.).
11. Hgr.	Leopoldville.	Messrs. Dubois and Mouchet (C.).

9. **MORMYRUS**, L.

1. MORMYRUS HASSELQUISTII, C. & V.

Pellegr. Poiss. Bass. Tchad, p. 56, fig. (1914).

Add Chad Basin to habitat.

2. MORMYRUS ANCHIETÆ, Guimar.

Recorded from the Upper Zambesi by Gilchrist and Thompson, Ann. S. Afr. Mus. xi. 1913, p. 332.

2 *a*. MORMYRUS ELLENBERGERI.

Pellegr. Bull. Soc. Zool. France, xxxix. 1914, p. 24.

Depth of body $4\frac{1}{4}$ to $4\frac{1}{3}$ times in total length, length of head 4 times. Head $1\frac{1}{2}$ times as long as deep, with curved upper profile; snout

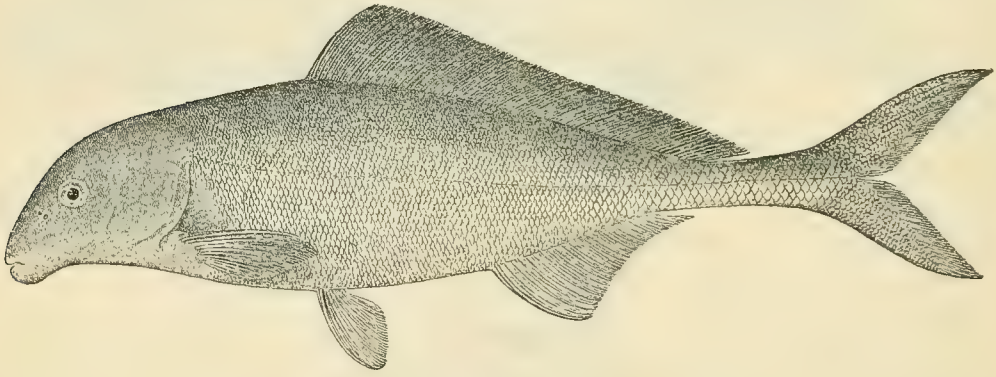
scarcely bent downwards, its length little more than $\frac{1}{2}$ postocular part of head; chin slightly swollen. Teeth notched, 7 or 8 in upper jaw, 11 in lower; eye moderate, its diameter $2\frac{1}{4}$ times in length of snout, twice in interorbital width. Dorsal 62–68, originating well in advance of ventral, $4\frac{1}{4}$ to $4\frac{1}{2}$ times as long as deep. Anal 18–19, originating nearer base of caudal than base of pectoral. Pectoral rounded, a little more than $\frac{1}{2}$ length of head, 3 times length of ventral. Caudal scaled at the base, with obtusely pointed lobes. Caudal peduncle $1\frac{1}{2}$ times as long as deep. 90–92 scales in lateral line, $\frac{15}{20-22}$ in transverse series on body, $\frac{13}{13}$ in transverse series between dorsal and anal, 18 round caudal peduncle. Brownish, with silvery sheen; fins dark.

Total length 153 millim.

Upper Zambesi.—Types in Paris Museum.

Distinguished from *M. anchietæ* by the less bent snout, more scales in the lateral line, and fewer round the caudal peduncle.

Fig. 110.



Mormyrus bumbanus.
Type. $\frac{1}{2}$.

3 *a*. MORMYRUS BUMBANUS.

Bouleng. Ann. & Mag. N. H. (8) iv. 1909, p. 186.

Mormyrus habereri, Steind. Anz. Ak. Wien, 1912, p. 443, and Denkschr, Ak. Wien. lxxxix. 1913, p. 9, fig.

Mormyrus jæ, Bouleng. Ann. & Mag. N. H. (8) xiv. 1914, p. 383.

Depth of body $4\frac{1}{3}$ to $4\frac{2}{3}$ times in total length, length of head $4\frac{2}{3}$ times. Head a little longer than deep, with strongly curved upper profile; snout short, measuring $\frac{2}{3}$ postorbital part of head; mouth terminal; teeth small, feebly notched, 5 or 7 in upper jaw, 8 or 10 in lower;

eye in anterior half of head, $1\frac{1}{2}$ to $2\frac{1}{2}$ times in length of snout or inter-orbital width. Dorsal 62–70, originating above base of ventral, 3 times as far from end of snout as from base of caudal, $2\frac{1}{2}$ to $2\frac{2}{3}$ times as long as anal. Anal 25–26. Pectoral obtusely pointed, $\frac{3}{4}$ to $\frac{4}{5}$ length of head. Caudal with pointed lobes, as long as or a little shorter than head. Caudal peduncle 3 times as long as deep, $\frac{3}{4}$ length of head. 93–100 scales in lateral line, $\frac{25}{22-23}$ in transverse series on body, 14–16 round caudal peduncle. Olive above, silvery white beneath.

Total length 225 millim.

South Cameroon (Congo System).

1. Type.	Bumba R. at Assobam.	G. L. Bates, Esq. (C.).
2. Type of *M. jæ.*	Ja R.	„

Intermediate between *M. macrophthalmus* and *M. ovis.*

8. MORMYRUS KANNUME, Forsk.

Keilhack, Mitth. Zool. Mus. Berl. v. 1910, p. 93.

Add :—

75–76. Yg.	Victoria Nile, between L. Kioja and Murchison Falls.	F. H. Melland, Esq. (P.).
77–79. Hgr.	Eusso Nyiro, Brit. E. Africa.	A. B. Percival, Esq. (P.).

12. MORMYRUS LONGIROSTRIS, Peters.

Add :—

6–7. Hgr.	L. Bangwelu.	F. H. Melland, Esq. (P.).

13. MORMYRUS RUME, C. & V.

Mormyrus jubelini, Pellegr. Poiss. Bass. Tchad, p. 57, pl. iii. fig. 2 (1914).

Add :—

21–22. Hgr.	Ogun R. at Aro, E. of Lagos.	Major G. E. Bruce (P.).
23. Ad.	Kamo, Hadeija R., Chad Basin.	Capt. G. B. Gosling (P.).
24. Ad.	Culufi R. above Bafata, Portug. Guinea.	Dr. W. J. Ansorge (C.).

10. **HYPEROPISUS**, Gill.

1. HYPEROPISUS BEBE, Lacep.

Pellegr. Poiss. Bass. Tchad, p. 58, pl. iii. fig. 3 (1914).

Erase *H. tenuicauda* from the synonymy, and add :—

50. Ad.	Culufi R. above Bafata, Portug. Guinea.	Dr. W. J. Ansorge (C.).
51. Ad.	Geba R. at Bafata.	,,

1*a*. HYPEROPISUS TENUICAUDA.

Pellegr. Bull. Mus. Paris, 1904, p. 312, and op. cit. p. 59, pl. iv.

Distinguished by the more slender caudal peduncle with only 16 scales round it.

Shari River.—Type in Paris Museum.

11. **GYMNARCHUS**, Cuv.

1. GYMNARCHUS NILOTICUS, Cuv.

Pellegr. Poiss. Bass. Tchad, p. 61, pl. v. fig. 1 (1914).

Fam. NOTOPTERIDÆ.

1. **NOTOPTERUS**, Lacep.

1. NOTOPTERUS AFER, Gthr.

Add :—

16–19. Hgr. & yg.	Nanna Kru, Liberia.	W. P. Lowe, Esq. (C.).
20. Hgr.	Corbal R. at Tchitote, Portug. Guinea.	Dr. W. J. Ansorge (C.).
21. Ad.	Geba R. at Bafata, Portug. Guinea.	,,
22–23. Hgr.	N. Sherbo district, Sierra Leone.	N. W. Thomas, Esq. (P.).

2. **XENOMYSTUS**, Gthr.

1. XENOMYSTUS NIGRI, Gthr.

Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 10.

Add :—

20–21. Yg.	Sankuru R. at Kondue, Kasai.	M. E. Luja (C.) ; Luxemburg Museum (P.).
22–24. Ad. & hgr.	N. Sherbo district, Sierra Leone.	N. W. Thomas, Esq. (P.).

Fam. OSTEOGLOSSIDÆ.

1. **HETEROTIS**, Ehrenb.

1. HETEROTIS NILOTICUS, Ehrenb.

Pellegr. Poiss. Bass. Tchad, p. 62, pl. v. fig. 2 (1914).

Add:—

22. Ad.	Kano, Hadeija R., Chad Basin.	Capt. G. B. Gosling (P.).
23. Ad.	Corbal R. at Chitata, Portug. Guinea.	Dr. W. J. Ansorge (C.).
24–26. Yg.	Aboina R., Cross R., S. Nigeria.	Capt. R. D. Gard'ner (P.).

Fam. PANTODONTIDÆ.

1. **PANTODON**, Peters.

1. PANTODON BUCHHOLZI, Peters.

Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 11; Pellegr. Poiss. Bass. Tchad, p. 63, fig. (1914).

Add:—

12–13. Ad.	Niger Delta.	Mr. J. Paul Arnold (P.).

According to Gilchrist and Thompson, Ann. S. Afr. Mus. xi. 1913, p. 334, this fish has been reported from Chirundu, Upper Zambesi.

Fam. CLUPEIDÆ.

2. **PELLONULA**, Gthr.

1. PELLONULA VORAX, Gthr.

Add:—

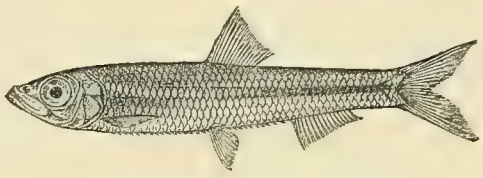
32. Ad.	Quanza R. at Cambambe, Angola.	Dr. W. J. Ansorge (C.).
33–34. Ad.	„ Dondo, „	„
35–38. Ad., hgr., & yg.	Bengo R. at Cabiri, „	„
39–42. Ad. & hgr.	Creek near Badagry, W. of Lagos.	Major G. E. Bruce (P.).
43. Ad.	Aboina R., Cross R., S. Nigeria.	Capt. R. D. Gard'ner (P.).
44. Ad.	Geba R. at Bafata, Portug. Guinea.	Dr. W. J. Ansorge (C.).
45–46. Ad.	Chiloango R. at Mayili.	„
47. Ad.	Loango R. at N'Kutu.	„
48–49. Ad.	Luali R. at Lundo.	„

50. Ad.	Luculla R., Chiloango.	Dr. W. J. Ansorge (C.).
51. Ad.	Lucola R. near Cabinda.	,,
52–58. Ad.	Lagos.	J. Cadman, Esq. (P.).

1*a*. PELLONULA LEONENSIS, sp. n.

Depth of body 5 times in total length, length of head $3\frac{3}{4}$ times. Snout pointed, nearly as long as eye, which is 3 times in length of head and equals $1\frac{1}{3}$ times interorbital width; chin feebly projecting beyond snout; maxillary extending to below anterior fourth of eye; teeth

Fig. 111.



Pellonula leonensis.
Type.

small, the larger confined to anterior extremity of mandible. Gill-rakers long and slender, 35–40 on lower part of anterior arch. Dorsal 16, equally distant from centre of eye and from root of caudal, longest rays $\frac{3}{5}$ length of head. Anal 16, a long way behind dorsal, nearer root of caudal than base of ventral. Pectoral $\frac{3}{5}$ length of head, widely separated from ventral. Ventral below anterior rays of dorsal. Caudal deeply forked, with pointed lobes. Caudal peduncle $1\frac{1}{3}$ times as long as deep. 45 scales in longitudinal series, 11–12 in transverse series; 16 keeled scutes between isthmus and ventrals, 10 between ventrals and anal. Yellowish, dotted with black above; a silvery lateral band.

Total length 57 millim.

Sierra Leone.

1–2. Types.	North Sherbo district.	N. W. Thomas, Esq. (P.).

Intermediate between *P. vorax* and *P. miodon*.

3. **ODAXOTHRISSA**, Blgr.

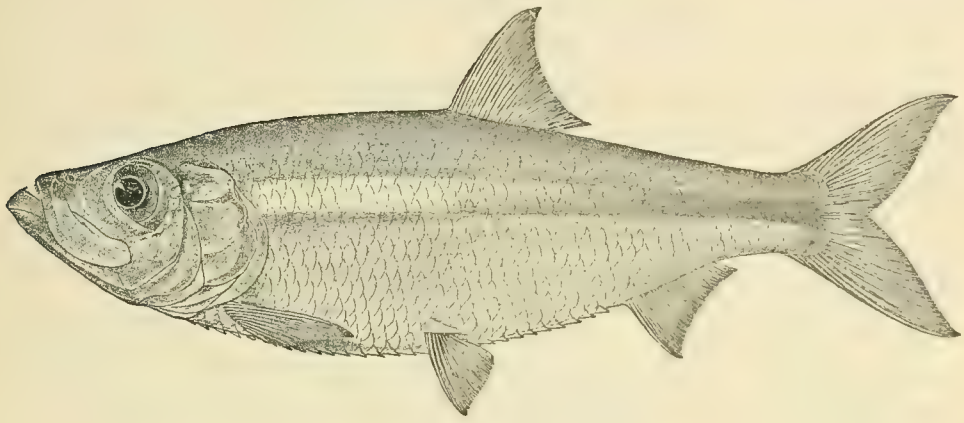
1*a*. ODAXOTHRISSA ANSORGII.

Bouleng. Ann. & Mag. N. H. (8) vi. 1910, p. 541.

Depth of body equal to length of head, 3 to $3\frac{1}{2}$ times in total length. Snout as long as eye, which is 3 to $3\frac{1}{4}$ times in length of head and exceeds interorbital width; chin strongly projecting; maxillary

extending to below centre of eye. Gill-rakers moderately elongate, 23–25 on lower part of anterior arch. Dorsal 15–16, originating immediately behind vertical of base of ventral, at equal distance from end of snout or anterior border of eye and from caudal. Anal 17–19. Pectoral $\frac{3}{5}$ to $\frac{2}{3}$ length of head, not reaching ventral. Caudal deeply forked, with pointed lobes. Caudal peduncle as long as deep. 40–45

Fig. 112.



Odaxothrissa ansorgii.
Type. $\frac{5}{7}$.

scales in longitudinal series, 16–17 in transverse series; 15–16 keeled scutes between isthmus and ventrals, 10–12 between ventrals and anal. Upper half, with dorsal and base of caudal, pale olive-green in life, lower half and other fins white; a broad silvery band along each side.

Total length 160 millim.

Angola.

1–2. Types.	Quanza R. at Cambambe.	Dr. W. J. Ansorge (C.).
3. Skel.	„ „	„
4–6. Types.	Lucalla R. at Kalenge.	„
7. Types.	Bengo R. at Cabiri.	„

Well distinguished from the type of the genus by the number of rays in the anal fin (17–19 instead of 21–22) and of scutes in the abdominal serrature (15–16+10–12 instead of 17–18+9–10).

Fam. KNERIIDÆ.

1. **KNERIA**, Stdr.

1. KNERIA ANGOLENSIS, Stdr.

A specimen from the Zambesi is referred provisionally to this species by Gilchrist and Thompson, Ann. S. Afr. Mus. xi. 1913, p. 335.

2. KNERIA SPEKII, Gthr.

Add:—

4–5. Ad. Mkata R., German E. Africa. Dr. E. J. Baxter (C.).

3. KNERIA CAMERONENSIS, Blgr.

Pappenh. Mitth. Zool. Mus. Berl. v. 1911, p. 509.

2. **XENOPOMATICHTHYS**, Pellegr.

1. XENOPOMATICHTHYS AURICULATUS, Pellegr.

In the description on p. 172, "Caudal peduncle half as long as deep" is a *lapsus calami*, and should be corrected to "Caudal peduncle half as deep as long."

1*a*. XENOPOMATICHTHYS ANSORGII.

Bouleng. Ann. & Mag. N. H. (8) vi. 1910, p. 542.

Depth of body equal to length of head, $5\frac{1}{3}$ times in total length. Snout rounded, nearly as long as eye, which is perfectly lateral, visible from below as well as from above, $3\frac{1}{2}$ times in length of head and $1\frac{1}{2}$ times in interorbital width; width of mouth equal to diameter of

Fig. 113.

Xenopomatichthys ansorgii.
Type.

eye; sides and lower surface of head with conical horny tubercles; cup-shaped apparatus on operculum much larger than eye, followed, on the scapular region, by a large lamellar pad (18 or 19 lamellæ). Dorsal III 7, originating at equal distance from eye and from root of caudal, well behind vertical of base of ventral. Anal III 8–9. Pectoral shorter than head. Caudal deeply notched, crescentic. Caudal peduncle 2 to $2\frac{1}{2}$ times as long as deep. Scales longitudinally striated, 110–120 in lateral line, 16–18 between dorsal and lateral line, 10–11 between lateral line and ventral. Pale brownish above, yellowish beneath, with scattered dark brown dots and a series of round blackish spots, connected

by a dark brown lateral band, just above the lateral line; fins uniform whitish, a black dot at base of ventral.

Total length 67 millim.

Angola.

1–2. Types.	Lucalla R. at Lucalla.	Dr. W. J. Ansorge (C.).

Distinguished from *X. auriculatus* by the longer body, the number of branched rays in the dorsal (7 instead of 8) and anal (8–9 instead of 6–7), and the number of scales in the lateral line (110–120 instead of 60–65).

Fam. CROMERIIDÆ.

CROMERIA, Blgr.

1. CROMERIA NILOTICA, Blgr.

Add:—

14–16. Ad.	Khor Barboy, White Nile.	H. H. King, Esq. (P.).

Fam. CHARACINIDÆ.

1. SARCODACES, Gthr.

1. SARCODACES ODOË, Bl.

Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 12; Pellegr. Poiss. Bass. Tchad, p. 66, pl. vi. fig. 1 (1914).

Add:—

34. Ad.	Okovango R., L. Ngami Basin.	R. B. Woosnam, Esq. (C.).
35–36. Ad.	Tano R., Gold Coast.	Dr. H. G. F. Spurrell (P.).
37. Ad.	Geba R. at Bafata, Portug. Guinea.	Dr. W. J. Ansorge (C.).
38–39. Ad. & yg.	Luali R. at Lundo, Chiloango.	„
40–41. Ad. & hgr.	N. Sherbo district, Sierra Leone.	N. W. Thomas, Esq. (P.).

2. HYDROCYON, Cuv.

1. HYDROCYON FORSKALII, Cuv.

Pellegr. Poiss. Bass. Tchad, p. 68, pl. vi. fig. 2 (1914).

Add:—

86. Yg.	Aboina R., Cross R., S. Nigeria.	Capt. R. D. Gard'ner (P.).
87–90. Ad. & hgr.	Geba R. at Bafata, Portug. Guinea.	Dr. W. J. Ansorge (C.).

2. HYDROCYON LINEATUS, Blkr.

Add :—

44–46. Ad. & hgr. L. Bangwelu. F. H. Melland, Esq. (C.).

5. HYDROCYON BREVIS, Gthr.

Pellegr. Poiss. Bass. Tchad, p. 69, fig. (1914).

3. **BRYCONÆTHIOPS**, Gthr.

1. BRYCONÆTHIOPS MICROSTOMA, Gthr.

Add :—

21–25. Hgr. Bumba R. at Assobam, S. Cameroon. G. L. Bates, Esq. (C.).

2. BRYCONÆTHIOPS YSEUXI, Blgr.

Bryconæthiops microstoma, var. *habereri*, Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 13, pl. ii. fig. 1.

Add :—

2–3. Ad. Ja R., S. Cameroon. G. L. Bates, Esq. (C.).

Perhaps not specifically distinct from *B. microstoma*.

4. **ALESTES**, M. & T.

1. ALESTES DENTEX, L.

Pellegr. Poiss. Bass. Tchad, p. 71, pl. v. fig. 3 (1914).

Add :—

62–63. Hgr. Lagoon at Asaba, Niger. Major G. E. Bruce (P.).
64. Yg. Aboina R., Cross R., S. Nigeria. Capt. R. D. Gard'ner (P.).

2. ALESTES BAREMOSE, Joann.

Pellegr. op. cit. p. 72, fig.

Add :—

93. Ad. Geba R. at Bafata, Portug. Guinea. Dr. W. J. Ansorge (C.).

3. ALESTES MACROPHTHALMUS, Gthr.

Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 14 ; Pappenh. in Schubotz, Wiss. Ergebn. Deutsch. Z.-Afr. Exped., Zool. iii. p. 232 (1914).

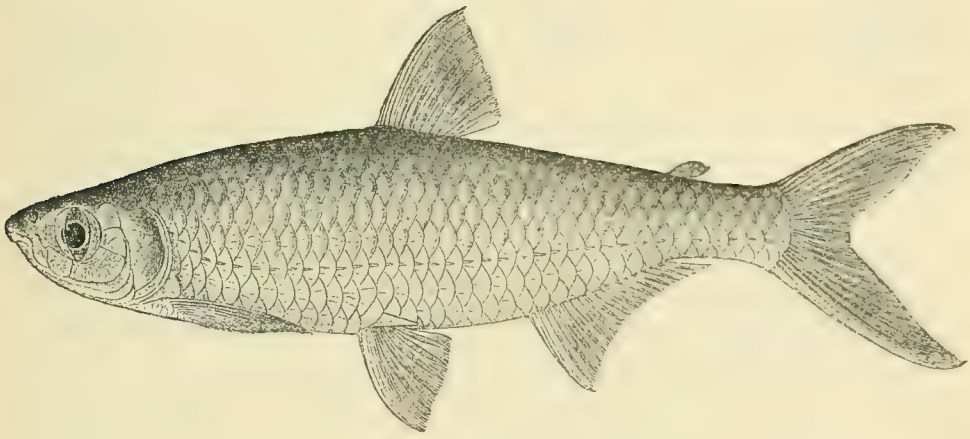
3*a*. ALESTES ANSORGII.

Bouleng. Ann. & Mag. N. H. (8) vi. 1910, p. 542.

Depth of body $3\frac{3}{4}$ to $4\frac{1}{2}$ times in total length, length of head $4\frac{1}{4}$ to 5 times. Head $1\frac{3}{4}$ to $2\frac{1}{4}$ times as long as broad, $1\frac{1}{5}$ to $1\frac{1}{4}$ times as

long as deep; snout as long as or shorter than eye, which is lateral and $2\frac{1}{2}$ (young) to $3\frac{1}{2}$ times in length of head; adipose eyelid well developed; interorbital region convex, its width $2\frac{2}{3}$ to 3 times in length of head; maxillary not extending to below anterior border of eye; 14 $(\frac{6}{8})$ teeth in upper jaw, 10 $(\frac{8}{2})$ in lower; lower border of second suborbital as long as eye. Gill-rakers long and slender, 15 to 18 on lower part of anterior arch. Dorsal II 8, originating above ventral, at equal distance from end of snout and from caudal, longest ray $\frac{4}{5}$ to once length of head. Anal III 17–18. Pectoral $\frac{3}{4}$ to once length of head, not

Fig. 114.



Alestes ansorgii.
Type. $\frac{2}{3}$.

reaching ventral. Caudal forked, with long pointed lobes. Caudal peduncle $1\frac{1}{3}$ to $1\frac{1}{2}$ times as long as deep. Scales 37–40 $\frac{5\frac{1}{2}\text{-}6\frac{1}{2}}{3\frac{1}{2}}$, $1\frac{1}{2}$ between lateral line and ventral. Steel-blue on the back, silvery white on the sides and below; fins greyish, ventral, anal, and caudal yellow or orange at the base; pectoral and ventral often with a large black or blackish blotch.

Total length 270 millim.

Angola.

1–6. Types.	Quanza R. at Cunga.	Dr. W. J. Ansorge (C.).
7–8. Types.	,, Dondo.	,,
9–11. Types.	Lucalla R. at Lucalla.	,,

Distinguished from *A. macrophthalmus* by larger scales (37–40 $\frac{5\frac{1}{2}\text{-}6\frac{1}{2}}{3\frac{1}{2}}$, $1\frac{1}{2}$, instead of 39–45 $\frac{6\frac{1}{2}\text{-}8\frac{1}{2}}{3\frac{1}{2}}$, 2).

6. ALESTES SADLERI, Blgr.

Add :—

3. Ad.	Entebbe.	M. Alluaud (C.); Paris Museum (E.).
4. Ad.	Kavirondo Bay.	,, ,,
5. Ad.	Jinja, Ripon Falls.	Dr. E. Bayon (C.); Genoa Museum (P.).
6. Ad.	Kisumu Bay, Kavirondo.	A. B. Percival, Esq. (C.).
7–9. Ad.	Malawa R., Kavirondo, 4000 ft.	Sir F. J. Jackson (P.).

7 *a*. ALESTES TESSMANNI.

Pappenh. Mitth. Zool. Mus. Berl. v. 1911, p. 510, fig.

Depth of body $2\frac{2}{3}$ to $2\frac{9}{10}$ times in total length, length of head $3\frac{3}{4}$ to 4 times. Head about twice as long as broad; snout shorter than eye; latter $2\frac{2}{3}$ to 3 times in length of head; adipose eyelid distinct; interorbital width $2\frac{1}{2}$ to $2\frac{4}{5}$ times in length of head; maxillary not extending to below anterior border of eye; 16 ($\frac{8}{8}$) teeth in upper jaw, 10 ($\frac{8}{2}$) in lower; lower border of second suborbital equal to diameter of eye. Gill-rakers moderately elongate, 16 or 17 on lower part of anterior arch. Dorsal II 8, above base of ventrals, originating at equal distance from end of snout and from adipose fin or a little nearer former; anterior branched rays a little produced, slightly longer than head. Anal III 17–19. Pectoral shorter than head, not reaching ventral. Caudal forked. Caudal peduncle $1\frac{1}{2}$ to $1\frac{3}{5}$ times as long as deep. Scales 37 $\frac{6\frac{1}{2}}{4\frac{1}{2}}$, 3 between lateral line and ventral. Silvery, darker on the back.

Total length 128 millim.

South Cameroon.—Types in Berlin Museum.

Intermediate between *A. tholloni* and *A. intermedius*.

8. ALESTES INTERMEDIUS, Blgr.

Add :—

7–9. Ad.	L. Chiluango, inland of Landana.	Dr. W. J. Ansorge (C.).

9. ALESTES LONGIPINNIS, Gthr.

Add :—

40–42. Ad.	Niger above junction with Benue.	A. C. Francis, Esq. (P.).
43–50. Ad. & hgr.	Omatu, Aboina R., Cross R.	Major G. E. Bruce (P.).
51–53. Ad. & yg.	Tano R., Gold Coast.	Dr. H. G. F. Spurrell (P.).

54–55. Ad.	Chiloango R. at Mayili.	Dr. W. J. Ansorge (C.).
56–57. Ad.	Loango R. at N'Kutu.	,,
58. Ad.	Luali R. at Buco Zau.	,,
59. Ad.	Lebuzi R. at Kuka Muno.	,,
60–61. Ad.	Lucola R. at Cabinda.	,,
62–63. Hgr.	Culufi R. at Bafata, Portug. Guinea.	,,
64. Ad.	N. Sherbo district, Sierra Leone.	N. W. Thomas, Esq. (P.).
65–66. Yg.	Pujehun, Sierra Leone.	,,

10. ALESTES CHAPERI, Sauv.

Add:—

9–18. Ad.	Odo Omi, Omi R., Lagos.	Major G. E. Bruce (P.).
19–21. Ad.	Bibia, near Awka, Lower Niger.	,,
22. Ad.	Oji R., Lower Niger.	,,
23. Ad.	Warri, ,,	Mr. J. Paul Arnold (P.).

11. ALESTES LATERALIS, Blgr.

Add:—

8–15. Ad. & hgr.	Okovango R., Ngami Basin.	R. B. Woosnam, Esq. (C.).

12. ALESTES NURSE, Rüpp.

Pellegr. Poiss. Bass. Tchad, p. 73, fig. (1914).

Alestes senegalensis, Stdr., should be regarded as specifically distinct, as defined by Boulenger, Ann. & Mag. N. H. (7) viii. 1901, p. 487.

Add:—

140–141. Ad.	Ogun R. at Aro, Lagos.	Major G. E. Bruce (P.).
142–151. Ad. & hgr.	Bol, L. Chad.	Paris Museum (E.).
152–155. Ad. & hgr.	Lagoon at Asaba, Lower Niger.	Major G. E. Bruce (P.).
156. Ad.	Jinja, Ripon Falls.	Dr. E. Bayon (C.) ; Genoa Museum (P.).
157–159. Yg.	Aboina, Cross R.	Capt. R. D. Gard'ner (P.).
160–165. Ad., hgr, & yg.	Geba R. at Bafata, Portug. Guinea.	Dr. W. J. Ansorge (C.).
166–168. Hgr. & yg.	Culufi R. at Bafata, Portug. Guinea.	,,
169–173. Ad. (*A. senegalensis*).	Culufi R. at Bafata, Portug. Guinea.	,,
174. Hgr.	Tulong R. at Bafata, Portug. Guinea.	,,

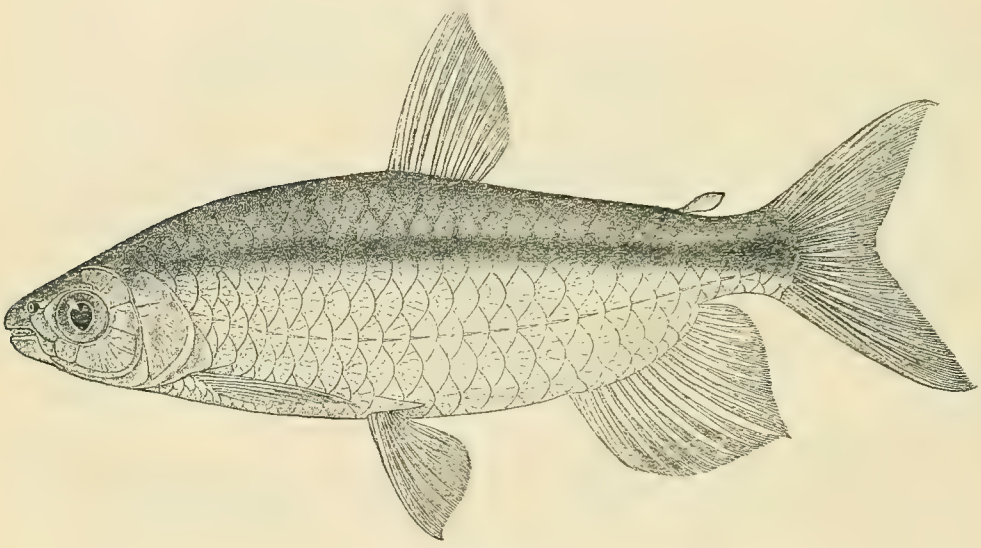
175. Ad.	Near Dunkwa, Gold Coast.	Dr. H. G. F. Spurrell (P.).
176–182. Ad.	Nyonki, S. of Gondokoro, Bahr-el-Gebel, 2070 ft.	Sir F. J. Jackson (P.).
183–184. Hgr.	Victoria, Sierra Leone.	N. W. Thomas, Esq. (P.).

13. ALESTES AFFINIS, Gthr.

Add :—

9–14. Ad.	River near Kilosa (Wami System), Usagara, German E. Africa.	Dr. E. J. Baxter (C.).

Fig. 115.



Alestes jacksonii.
Type. $\frac{5}{8}$.

13*a*. ALESTES JACKSONII.

Boulenger. Ann. & Mag. N. H. (8) x. 1912, p. 601.

Depth of body 3 times in total length, length of head 4 times. Head twice as long as broad, slightly longer than deep; snout rounded, as long as eye, which is lateral and $3\frac{1}{2}$ times in length of head; interorbital region feebly convex, its width $2\frac{2}{3}$ times in length of head; maxillary nearly reaching to below anterior border of eye; 16 ($\frac{8}{8}$) teeth in upper jaw, 10 ($\frac{8}{2}$) in lower; lower border of suborbital as long as eye. Gill-rakers moderately long, 16 on lower part of anterior arch. Dorsal II 8, originating just behind vertical of base of ventral, at equal distance from eye and from caudal, longest ray as long as head. Anal

III 15, pointed in the middle (male). Pectoral nearly as long as head, reaching ventral. Caudal deeply forked, lobes pointed. Caudal peduncle a little longer than deep. Scales with radiating and anastomosing canals, 26 $\frac{4\frac{1}{2}}{3\frac{1}{2}}$, 2 between lateral line and ventral. Silvery, brownish on the back, with a rather indistinct dark lateral band from above the gill-cover to the root of the caudal fin; dorsal greyish, other fins yellow.

Total length 150 millim.

Malawa River, Lake Victoria.

1. Type.	Malawa R., Kavirondo, 4000 ft.	Sir F. J. Jackson (P.).

Allied to *A. affinis*, but gill-rakers and anal rays fewer and $4\frac{1}{2}$ scales above lateral line instead of $5\frac{1}{2}$.

14. ALESTES IMBERI, Peters.

Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 15; Pappenh. in Schubotz, Wiss. Ergebn. Deutsch. Z.-Afr. Exped., Zool. iii. p. 233 (1914).

Add:—

38–41. Ad. & hgr.	Bumba R. at Assobam, S. Cameroon.	G. L. Bates, Esq. (C.).
42. Hgr.	Kondue, Kasai.	M. E. Luja (C.); Luxemburg Museum (P.).
43–45. Ad.	L. Bangwelu.	F. H. Melland, Esq. (P.).

16. ALESTES KINGSLEYÆ, Gthr.

Add:—

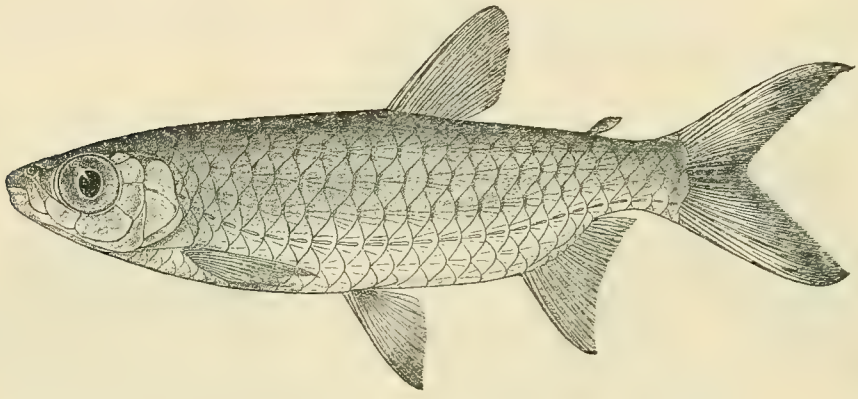
8. Ad.	Chiloango R. at Mayili.	Dr. W. J. Ansorge (C.).
9–10. Hgr.	Chiloango Town.	,,
11–13. Ad. & hgr.	Luali R. (Chiloango) at Buco Zau.	,,
14–16. Hgr. & yg.	Luali R. at Sassa Zau.	,,
17–18. Ad.	Lebuzi R. (Chiloango) at Kuka Muno.	,,
19–20. Ad.	Luculla R. (Chiloango).	,,

16 *a*. ALESTES RUTILUS, sp. n.

Depth of body $3\frac{1}{2}$ times in total length, length of head 4 times. Head twice as long as broad, a little longer than deep; snout as long as or a little shorter than eye, which is lateral and $2\frac{2}{3}$ to 3 times in length of head; adipose eyelid feebly developed; interorbital region feebly convex, its width $2\frac{1}{3}$ times in length of head; maxillary not extending

quite to below anterior border of eye ; 18 ($\frac{10}{8}$) teeth in upper jaw, 10 ($\frac{8}{2}$) in lower; lower border of second suborbital as long as eye. Gill-rakers moderately long, 14 to 16 on lower part of anterior arch. Dorsal II 8, originating just behind vertical of base of anal, at equal distance from eye and from caudal ; longest ray shorter than head. Anal III 12–13. Pectoral $\frac{4}{5}$ length of head, not reaching ventral. Caudal forked, with pointed lobes. Caudal peduncle as long as deep. Scales with radiating canals, 25–26 $\frac{4\frac{1}{2}}{3\frac{1}{2}}$, $1\frac{1}{2}$ between lateral line and ventral.

Fig. 116.



Alestes rutilus.
Type.

Silvery, back olive-brown ; eye, dorsal, and a large blotch on ventral and on each lobe of caudal bright vermilion ; middle rays of caudal blackish.

Total length 110 millim.

Sierra Leone.

1–2. Types.	N. Sherbo district.	N. W. Thomas, Esq. (P.).

Distinguished from *A. kingsleyæ* chiefly by the more posterior position of the dorsal fin.

19. ALESTES OPISTHOTÆNIA, Blgr.

Add :—

13–14. Ad.	Ja R. at Bitye.	G. L. Bates, Esq. (C.).
15, 16. Ad.	Nyong R. at Akonolinga.	,,

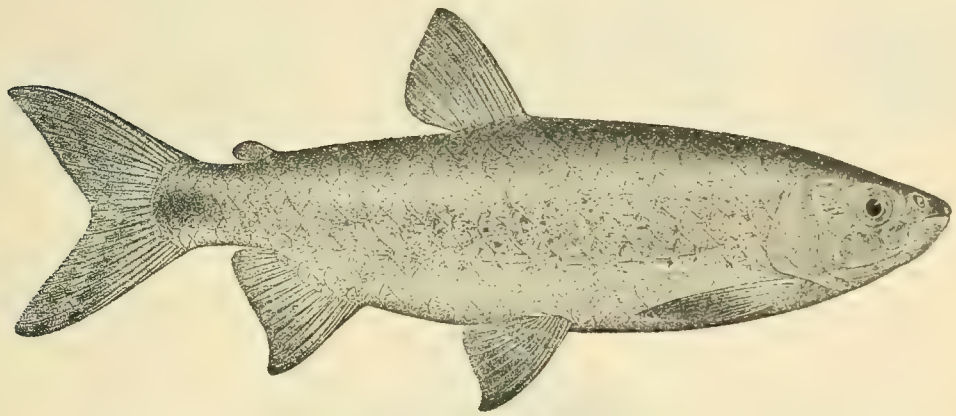
20*a*. ALESTES SCHOUTEDENI.

Bouleng. Ann. Mus. Congo, Zool. ii. 3, p. 7, pl. xviii. fig. 1 (1912).

Depth of body $3\frac{1}{3}$ to $3\frac{2}{3}$ times in total length, length of head 4 to $4\frac{1}{3}$

times. Head nearly as long as deep, its width a little less than its length to occiput; snout rounded, projecting a little beyond the mouth, as long as or a little longer than eye; eye perfectly lateral, $3\frac{1}{3}$ to 4 times in length of head; interorbital width twice in length of head; maxillary not extending to below anterior border of eye; 16 $(\frac{8}{8})$ teeth in upper jaw, 10 $(\frac{8}{2})$ in lower; lower border of second suborbital equal to diameter of eye or a little longer. Gill-rakers moderate, 17 to 20 on lower part of anterior arch. Dorsal II 8, originating immediately behind vertical

Fig. 117.



Alestes schoutedeni.
Type (A. M. C.). $\frac{1}{2}$.

of last ray of ventral, and at equal distance from anterior or posterior border of eye and from root of caudal; first branched ray $\frac{3}{4}$ to $\frac{4}{5}$ length of head. Anal III 11–12. Pectoral a little shorter than head, not reaching ventral. Caudal forked, with pointed lobes. Caudal peduncle a little longer than deep. Scales with anastomosing canals, 26–28 $\frac{4\frac{1}{2}}{3\frac{1}{2}}$, $1\frac{1}{2}$ between lateral line and ventral. Olive-brown above, pinkish white beneath; sometimes a broad dark brown band along the side; a large blackish blotch on the caudal peduncle; fins brownish grey, pectorals and ventrals sometimes with a large median black spot.

Total length 220 millim.

Chiloango System, Lower Congo.

1–2. Types.	Lebuzi R. at Boma Vonde.	Dr. W. J. Ansorge (C.).
3. Type.	„ Kuka Muno.	„

Intermediate between *A. poptæ* and *A. grandisquamis* in the position of the dorsal fin; distinguished from both by the more numerous gill-rakers.

21. ALESTES MACROLEPIDOTUS, C. & V.

Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 15 ; Pellegr. Poiss. Bass. Tchad, p. 74 (1914).

Add :—

55–56. Ad.	Kano, Hadeija R., Chad Basin.	Capt. G. B. Gosling (P.).
57. Yg.	Ogun R. at Aro, Lagos.	Major G. E. Bruce (P.).
58–59. Yg.	Aboina R., Cross R.	Capt. R. D. Gard'ner (P.).
60–61. Ad. & hgr.	Geba R. at Bafata, Portug. Guinea.	Dr. W. J. Ansorge (C.).
62. Ad.	Pulong R., Portug. Guinea.	,,
63–64. Ad.	Near Dunkwa, Gold Coast.	Dr. H. G. F. Spurrell (P.).
65. Ad.	Nyong R. at Akonolinga, S. Cameroon.	G. L. Bates, Esq. (C.).

24. ALESTES BATESII, Blgr.

Add :—

7. Ad.	Kribi R. at Kribi.	G. L. Bates, Esq. (C.).

5. **MICRALESTES**, Blgr.

1. MICRALESTES ACUTIDENS, Peters.

Pellegr. Poiss. Bass. Tchad, p. 76, fig. (1914).

Add :—

95–99. Ad.	Cairo.	M. J. Nicoll, Esq. (P.).
100. Ad.	Khor on Sobat R.	H. H. King, Esq. (P.).

3. MICRALESTES HUMILIS, Blgr.

Add :—

17–18. Ad.	Bumba R. at Assobam, S. Cameroon.	G. L. Bates, Esq. (C.).
19. Ad.	Omalu, Aboina R., Cross R.	Major G. E. Bruce (P.).

4. MICRALESTES HOLARGYREUS, Gthr.

Add :—

7–9. Ad.	Bumba R. at Assobam, S. Cameroon.	G. L. Bates, Esq. (C.).

7. MICRALESTES ALTUS, Blgr.

Add :—

6–9. Ad.	Bumba R. at Assobam, S. Cameroon.	G. L. Bates, Esq. (C.).

6. PETERSIUS, Hilg.

2. PETERSIUS HILGENDORFI, Blgr.

Add :—

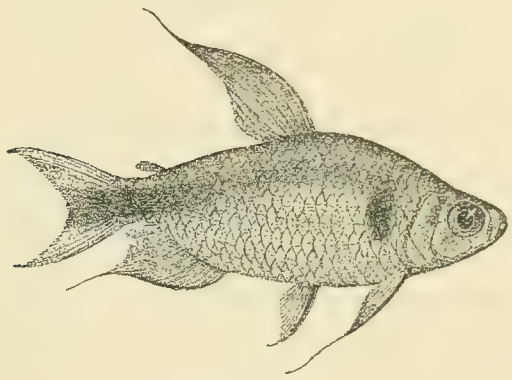
15. Ad. Matadi, Lower Congo. Mr. J. Paul Arnold (P.).

2 *a*. PETERSIUS ANSORGII.

Bouleng. Ann. & Mag. N. H. (8) vi. 1910, p. 543, and Ann. Mus. Congo, Zool. ii. 3, p. 8, pl. xvii. fig. 2 (1912).

Depth of body $2\frac{1}{2}$ to $2\frac{3}{4}$ times in total length, length of head $3\frac{1}{2}$ to 4 times. Head as long as deep, with slightly concave upper profile ; lower jaw not projecting beyond upper ; snout much shorter than eye, which is $2\frac{1}{2}$ to $2\frac{2}{3}$ times in length of head and equals interorbital width ;

Fig. 118.



Petersius ansorgii.
Type (A. M. C.).

maxillary extending to below anterior border of eye ; outer præmaxillary teeth 4, alternating with those of the inner row, 8 in number ; 8 teeth in lower jaw. Gill-rakers moderate, 18 to 20 on lower part of anterior arch. Dorsal II 8, originating above base of ventral, some of the rays produced into long filaments in males. Anal II–III 20–23, pointed in males, median ray produced into a filament. Pectoral as long as or a little shorter than head, produced into a filament in fully developed males. Caudal forked. Caudal peduncle as long as deep. Scales 31–33 $\frac{6\frac{1}{2}-7\frac{1}{2}}{3\frac{1}{2}}$, $1\frac{1}{2}$–2 between lateral line and ventral. Reddish brown above, more red on the sides, approaching vermilion, silvery beneath,

with a more or less distinct dark lateral band extending on the caudal fin, and a vertical dark bar above pectoral; fins greyish, tinged with vermilion.

Total length 65 millim.

Angola to Chiloango River.

1–10. Types.	L. Kilunda, Bengo R., Angola.	Dr. W. J. Ansorge (C.).
11–16. Types.	Bengo R. at Cabiri, Angola.	,,
17–18. Ad.	Chiloango Town.	,,
19–20. Ad.	Chiloango R. at Mayili.	,,
21–24. Ad.	Loango R. at N'Kutu.	,,
25. Ad.	Lebuzi R. at Kuka Muno.	,,
26–28. Ad.	Luali R. at Buco Zau.	,,
29–32. Ad. & hgr.	Luculla R.	,,
33–35. Ad.	L. Chiluango, near Landana.	,,
36–37. Ad.	Lucola R., near Cabinda.	,,

Distinguished from *P. hilgendorfi* by a shorter body, the shape of the pectoral and anal fins in the adult male, more numerous gill-rakers, and fewer scales in the lateral line.

2*b*. PETERSIUS UBALO.

Bouleng. Ann. & Mag. N. H. (8) vi. 1910, p. 544.

Depth of body 3 to $3\frac{1}{2}$ times in total length, length of head $3\frac{2}{3}$ to 4 times. Head as long as deep, with slightly concave upper profile; lower jaw not projecting beyond upper; snout much shorter than eye, which is $2\frac{1}{2}$ to $2\frac{2}{3}$ times in length of head and equals interorbital width; maxillary extending to below anterior border of eye; outer præmaxillary teeth 4, alternating with those of the inner row, 8 in number; 8 teeth in lower jaw. Gill-rakers rather long, 16 to 18 on lower part of anterior arch. Dorsal II 8, originating above base of ventral, longest ray as long as head. Anal III 18–20. Pectoral as long as or a little shorter than head, not reaching ventral. Caudal forked. Caudal peduncle as long as deep. Scales 30–34 $\frac{6\frac{1}{2}-7\frac{1}{2}}{3\frac{1}{2}}$, 2 between lateral line and ventral. Yellowish green above, silvery beneath; fins whitish; a more or less distinct dark lateral band, terminating in a rhomboidal black blotch on caudal peduncle and median rays of caudal fin.

Total length 45 millim.

Angola.

1–8. Types.	L. Kilundu, Bengo R.	Dr. W. J. Ansorge (C.).
9–14. Types.	L. Rumango, Cabiri.	,,

Distinguished from the preceding by a more elongate body, longer gill-rakers, fewer branched rays in the anal fin, and especially by the more normal shape of the fins in the male.

7 *a*. PETERSIUS SEPTENTRIONALIS.

Bouleng. Ann. & Mag. N. H. (8) vii. 1911, p. 373.

Depth of body equal to length of head, $3\frac{1}{2}$ to $3\frac{3}{4}$ times in total length. Head twice as long as broad, longer than deep; lower jaw projecting slightly beyond snout; snout shorter than eye, which is $2\frac{1}{2}$ times in length of head and exceeds interorbital width; maxillary extending to below anterior border of eye; outer præmaxillary teeth 4, alternating with those of the inner row, 8 in number; 8 teeth in lower jaw. Gill-rakers moderately long, 12 on lower part of anterior arch. Dorsal II 7, originating above ventral, at equal distance from centre of eye and from root of caudal. Adipose fin very small. Anal III 13–14. Pectoral nearly as long as head, not quite reaching ventral. Caudal deeply forked. Caudal peduncle a little longer than deep. Scales 25–26 $\frac{4\frac{1}{2}}{2\frac{1}{2}}$, 1 or $1\frac{1}{2}$ between lateral line and ventral. Silvery, finely speckled with brown on the back; a blackish lateral band; fins white.

Total length 45 millim.

Portuguese Guinea.

1–5. Types. Geba R. at Bafata. Dr. W. J. Ansorge (C.).

Distinguished from all the species with alternating præmaxillary teeth and a complete lateral line by the low number of scales in the lateral line.

8. PETERSIUS PULCHER, Blgr.

Add:—

3. Ad. Sankuru R. at Kondue, Kasai, Congo. M. E. Luja (C.); Luxemburg Museum (P.).

9. PETERSIUS MAJOR, Blgr.

Add:—

13–15. Ad. Ja R. at Bitye. G. L. Bates, Esq. (C.).

10. PETERSIUS SPILOPTERUS, Blgr.

Add:—

4–5. Ad. Wari, Lower Niger. Mr. J. Paul Arnold (P.).

7. EUGNATHICHTHYS, Blgr.

1. EUGNATHICHTHYS EETVELDII, Blgr.

Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 16.

Eugnathichthys intermedius, Pappenh. in Schubotz, Wiss. Ergebn. Deutsch. Z.-Afr. Exped., Zool. iii. p. 234, pl. iv. fig. 5 (1914).

Add :—

9. Yg.	Sankuru R. at Kondue, Kasai.	M. E. Luja (C.); Luxemburg Museum (P.).

2. EUGNATHICHTHYS MACROTEROLEPIS, Blgr.

Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 16.

Add :—

5. Yg.	Sankuru R. at Kondue, Kasai.	M. E. Luja (C.); Luxemburg Museum (P.).

9. MESOBORUS, Pellegr.

Champsoborus, Bouleng. Ann. & Mag. N. H. (8) iv. 1909, p. 187 *.

1 *a*. MESOBORUS PELLEGRINI.

Champsoborus pellegrini, Bouleng. l. c.

Mesoborus crocodilus (non Pellegr.), Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 18, pl. ii. fig. 2.

Distinguished from *M. crocodilus* by the higher number (15–16) of branched rays in the dorsal, 10 to 12 scales between lateral line and

Fig. 119.

Mesoborus pellegrini.
Type.

ventral, and by the coloration. Yellowish, with rounded brown spots, the largest of which form a series along the lateral line; three blackish

* In describing *M. pellegrini* from young specimens I overlooked the inner row of teeth. I have since examined adult specimens.

streaks across the dorsal; symmetrical black markings on the caudal; all these markings very similar to those of *Paraphago rostratus* or of *Eugnathichthys macroterolepis*.

Total length 180 millim.

Congo System.

1–2. Types.	Bumba R. at Assobam, S. Cameroon.	G. L. Bates, Esq. (C.).
3–4. Yg.	Sankuru R. at Kondue, Kasai.	M. E. Luja (C.); Luxemburg Museum (P.).

10. **PHAGO**, Gthr.

1. PHAGO ROSTRATUS, Gthr.

Add:—

2. Ad.	Wari, Lower Niger.	Mr. J. Paul Arnold (P.).

3. PHAGO BOULENGERI, Schilth.

Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 17.

Add:—

10–13. Ad. & yg.	Sankuru R. at Kondue, Kasai.	M. E. Luja (C.); Luxemburg Museum (P.).
14. Ad.	Leopoldville.	Messrs. Dubois & Mouchet (C.).

11. **NEOBORUS**, Blgr.

1. NEOBORUS ORNATUS, Blgr.

Add:—

5–6. Yg.	Leopoldville.	Messrs. Dubois & Mouchet (C.).

2. NEOBORUS QUADRILINEATUS, Pellegr.

Add:—

1–6. Ad., hgr., & yg.	Geba R. at Bafata, Portug. Guinea.	Dr. W. J. Ansorge (C.).
7–9. Ad.	Culufi R. above Bafata, Portug. Guinea.	„
10. Skel.	„ „	„

12. **ICHTHYOBORUS**, Gthr.

1. ICHTHYOBORUS BESSE, Joann.

Pellegr. Poiss. Bass. Tchad, p. 77, fig. (1914).

14. NANNÆTHIOPS, Gthr.

1. NANNÆTHIOPS UNITÆNIATUS, Gthr.

Add:—

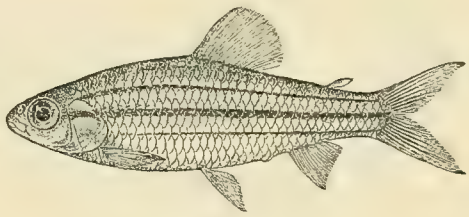
19–23. Hgr.	Culufi R. at Bafata, Portug. Guinea.	Dr. W. J. Ansorge (C.).
24–25. Ad.	Lucola R. near Cabinda.	,,
26–27. Ad.	Chiloango R. at Sassa Zau.	,,
28–29. Ad.	Luali R. at Lundo.	,,
30–32. Hgr.	Lebuzi R. at Kuka Muno.	,,
33–36. Ad. & hgr.	Luculla R., Chiloango.	,,

1 *a*. NANNÆTHIOPS TRITÆNIATUS.

Bouleng. Rev. Zool. Afr. ii. 1913, p. 157.

Depth of body $3\frac{1}{4}$ times in total length, length of head $3\frac{1}{2}$ times. Head twice as long as broad, a little longer than deep, smooth above; snout rounded, shorter than eye, which is 3 times in length of head

Fig. 120.



Nannœthiops tritæniatus.
Type. × $1\frac{1}{2}$.

and a little less than interorbital width; mouth subterminal, upper lip projecting a little beyond lower; maxillary extending to below anterior border of eye. Gill-rakers short, 10 on lower part of anterior arch. Dorsal III 10–11, originating above ventral, its base nearer caudal than eye. Anal III 7. Pectoral a little more than $\frac{2}{3}$ length of head, a little longer than ventral. Caudal forked, with pointed lobes. Caudal peduncle as long as deep. 34–35 scales in longitudinal series, 12 in transverse series, $4\frac{1}{2}$–5 between lateral line series and ventral fin; lateral line reduced to the 5–8 anterior scales. Three black streaks along each side, the median broadest.

Total length 40 millim.

Uellé, Upper Congo.—Types in Congo Museum, Tervueren.

1. One of the types. Dungu. Capt. Hutereau (C.).

Dorsal fin originating further back than in *N. unitæniatus*.

15. **NEOLEBIAS**, Stdr.

2 *a*. NEOLEBIAS ANSORGII.

Bouleng. Ann. Mus. Congo, Zool. ii. 3, p. 8, pl. xvii. fig. 2 (1912).

Depth of body $2\frac{2}{3}$ to 3 times in total length, length of head 3 to $3\frac{1}{4}$ times. Head twice as long as broad, a little longer than deep, smooth above, with large fontanelle; snout rounded, much shorter than eye, which is 3 times in length of head and equals interocular width; mouth terminal; maxillary extending to below anterior border of eye; 14 teeth in outer præmaxillary series. Gill-rakers short, about 12 on lower part of anterior arch. Dorsal III 8, originating immediately behind vertical of ventrals, longest ray $\frac{3}{4}$ length of head. No adipose dorsal. Anal II 6. Pectoral nearly $\frac{2}{3}$ length of head, as long as ventral.

Fig. 121.

Neolebias ansorgii.
Type (A. M. C.).

Caudal forked, with pointed lobes. Caudal peduncle a little longer than deep. 29–32 scales in longitudinal series, 9 in transverse series between dorsal and ventral; lateral line about or reduced to 3 or 4 scales behind the gill-cover. Green above, with a broad darker band along the side and a dark green bar, edged anteriorly with yellowish, at the base of the caudal; dorsal and caudal pale orange, other fins bright orange or vermilion, sometimes blackish at the end.

Total lenght 27 millim.

Chiloango.

1–4. Types. Marshes near Luculla R. Dr. W. J. Ansorge (C.).
5–6. Types. Luali R. at Lundo. ,,

Distinguished from the other species of the genus by the more posterior position of the dorsal fin.

2 *b*. NEOLEBIAS SPILOTÆNIA.

Bouleng. Ann. Mus. Congo, Zool. ii. 3, p. 9, pl. xvii. fig. 3 (1912).

Depth of body $3\frac{2}{3}$ to 4 times in total length, length of head $3\frac{1}{2}$ to 4 times. Head twice as long as broad, a little longer than deep, smooth above, with large fontanelle; snout rounded, a little shorter than eye, which is $2\frac{1}{2}$ to $2\frac{2}{3}$ times in length of head and equals interocular width; mouth terminal; maxillary not extending to below anterior border of eye; about 20 teeth in outer præmaxillary series. Gill-rakers very short. Dorsal III 11–12, originating slightly in front of vertical of first ray of ventral, longest ray nearly as long as head. Adipose dorsal minute or absent. Anal II 6. Pectoral nearly $\frac{2}{3}$ length of head, as long

Fig. 122.

Neolebias spilotænia.
Type (A. M. C.).

as ventral. Caudal forked, with pointed lobes. Caudal peduncle nearly twice as long as deep. 40–43 scales in longitudinal series, 12-13 in transverse series between dorsal and ventral; lateral line reduced to 3–6 scales behind gill-cover. Yellowish, back speckled with brown; a dark brown lateral band from end of snout to caudal, passing through the eye, this band formed of large more or less confluent spots; a more or less distinct blackish spot on the dorsal.

Total length 33 millim.

Chiloango.

1–8. Types.	Lebuzi R. at Kuka Muno.	Dr. W. J. Ansorge (C.).
9–15. Types.	Luali R. at Lundo.	,,

Distinguished from all its congeners by the more numerous dorsal fin-rays and scales.

16. DISTICHODUS, M. & T.

1. DISTICHODUS AFFINIS, Gthr.

Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 19.

Add:—

5–6. Yg.	Sankuru R. at Kondue, Kasai.	M. E. Luja (C.); Luxemburg Museum (P.).

2. DISTICHODUS ALTUS, Blgr.

Pellegr. Poiss. Bass. Tchad, p. 79, pl. vi. fig. 3 (1914).

4. DISTICHODUS NOTOSPILUS, Gthr.

Bouleng. Ann. Mus. Congo, Zool. ii. 3, p. 10 (1912).

Add:—

20. Ad.	Loando R. at N'Kutu.	Dr. W. J. Ansorge (C.).
21–26. Ad., hgr., & yg.	Luali R. at Buco Zau.	,,
27. Ad.	Lebuzi R. at Boma Vonde.	,,
28–29. Ad.	,, Kuka Muno.	,,
30. Ad.	Luculla R.	,,

5. DISTICHODUS HYPOSTOMATUS, Pellegr.

Pappenh. Mitth. Zool. Mus. Berl. v. 1911, p. 512.

6. DISTICHODUS MACULATUS, Blgr.

Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 20.

Add :—

2–3. Yg.	Sankuru R. at Kondue, Kasai.	M. E. Luja (C.) ; Luxemburg Museum (P.).

10. DISTICHODUS MOSSAMBICUS, Peters.

Add:—

5. Ad.	Zambesi below Victoria Falls.	K. B. Fairbairn, Esq. (P.).

11. DISTICHODUS FASCIOLATUS, Blgr.

Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 21.

Add :—

13, 14. Hgr. & yg.	Sankuru R. at Kondue, Kasai.	M. E. Luja (C.) ; Luxemburg Museum (P.).

12. DISTICHODUS ENGYCEPHALUS, Gthr.

Add:—

8–11. Hgr.	Ogun R. at Aro, Lagos.	Major G. E. Bruce (P.).
12. Yg.	Aboina R., Cross R.	Capt. R. D. Gard'ner (P.).
13. Yg.	Abinsi, Benue R., N. Nigeria.	Dr. J. M. Dalziel (P.).

13. DISTICHODUS BREVIPINNIS, Gthr.

Pellegr. Poiss. Bass. Tchad, p. 80, fig. (1914).

15. DISTICHODUS ROSTRATUS, Gthr.

Pellegr. Poiss. Bass. Tchad, p. 81, fig. (1914).

Add:—

27. Hgr.	Lagoon at Asaba, Lower Niger.	Major G. E. Bruce (P.).
28–33. Yg.	Aboina R., Cross R.	Capt. R. D. Gard'ner (P.).
34–35. Yg.	Abinsi, Benue R., N. Nigeria.	Dr. J. M. Dalziel (P.).

17. DISTICHODUS LUSOSSO, Schilth.

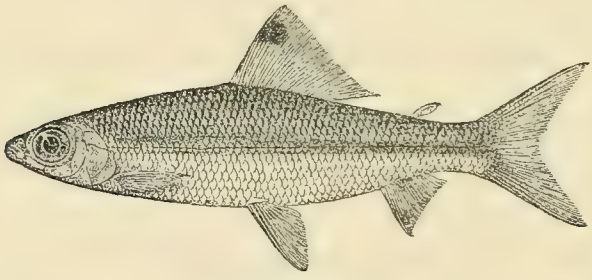
Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 21.

17 *a*. DISTICHODUS ANSORGII.

Bouleng. Ann. & Mag. N. H. (8) vii. 1911, p. 373.

Depth of body $3\frac{3}{4}$ to $4\frac{1}{2}$ times in total length, length of head $4\frac{1}{3}$ to 5 times. Head longer than deep; snout rounded, not compressed, projecting very slightly beyond mouth, shorter than eye, which is $2\frac{1}{2}$ to $2\frac{2}{3}$ times in length of head and equals interorbital width; maxillary extending to below nostrils; teeth in a single series, 20 or 22 in each jaw. Dorsal 17–19 (4 unbranched), equally distant from occiput and

Fig. 123.



Distichodus ansorgii.
Type.

from caudal, its base equal to its distance from adipose fin, which is not scaly. Anal 11–12 (3–4 unbranched), its base much shorter than that of dorsal. Pectoral about $\frac{2}{3}$ length of head. Caudal deeply forked, lobes pointed. Caudal peduncle as long as deep or a little longer than deep. Scales 55–62 $\frac{7\frac{1}{2}-8\frac{1}{2}}{7\frac{1}{2}-8\frac{1}{2}}$, $5\frac{1}{2}$–6 between lateral line and root of ventral. Yellow, speckled with brown above the lateral line, silvery white

beneath; a more or less distinct blackish band may be present along the lateral line; dorsal and caudal fins lemon-yellow, the former with a black spot in the upper third of its anterior part.

Total length 70 millim.

Portuguese Guinea.

1–6. Types.	Geba R. at Bafata.	Dr. W. J. Ansorge (C.).
7–10. Types.	Culufi R. „	„
11–13. Types.	Pulong R. „	„

The smallest and most slender species of the genus, further remarkable for the absence of scales on the adipose dorsal fin.

17. **NANNOCHARAX**, Gthr.

2. NANNOCHARAX PARVUS, Pellegr.

Bouleng. Ann. Mus. Congo, Zool. ii. 3, p. 14 (1912).

Add:—

2–7. Ad. & hgr.	L. Chiluango near Landana.	Dr. W. J. Ansorge (C.).
8–9. Ad.	Luali R. (Chiloango) at Buco Zau.	„
10–13. Ad. & hgr.	Luculla R., Cabinda.	„

3. NANNOCHARAX FASCIATUS, Gthr.

Add:—

12–13. Ad.	N. Sherbo district, Sierra Leone.	N. W. Thomas, Esq. (P.).
14–15. Ad.	Pujehun, Sierra Leone.	„

4. NANNOCHARAX INTERMEDIUS, Blgr.

Add:—

17–18. Ad.	Ja R. at Bitye.	G. L. Bates, Esq. (C.).

8. NANNOCHARAX TÆNIA, Blgr.

Add:—

2. Ad.	Dungu, Uellé.	Capt. Hutereau (C.).

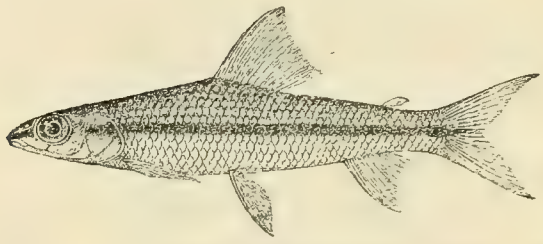
8*a*. NANNOCHARAX ANSORGII.

Bouleng. Ann. & Mag. N. H. (8) vii. 1911, p. 374.

Depth of body $3\frac{2}{3}$ to $4\frac{1}{3}$ times in total length, length of head $3\frac{1}{4}$ to $3\frac{3}{4}$ times. Head deeper than broad; snout as long as or a little shorter than eye, which is 3 to $3\frac{1}{3}$ times in length of head and equals interorbital

width. Dorsal III 9–10, originating a little in front of base of ventral, situated at equal distance from centre of eye and from root of caudal, longest ray nearly as long as or a little shorter than head. Anal III 7–8. Pectoral $\frac{3}{4}$ to $\frac{4}{5}$ length of head, not reaching root of ventral. Caudal forked, with pointed lobes. Caudal peduncle $1\frac{1}{2}$ times as long as deep. Scales 40–45 $\frac{5\frac{1}{2}}{6-7}$, 4 to $4\frac{1}{2}$ between lateral line and ventral.

Fig. 124.



Nannocharax ansorgii.
Type. × $1\frac{1}{2}$.

Back straw-colour, with numerous fine dark longitudinal lines; a lateral series of large black spots on the lateral line, usually confluent into a broad band terminating on the caudal fin; bases of dorsal, ventral, and caudal fins pale orange.

Total length 43 millim.

Portuguese Guinea, Sierra Leone.

1–5. Types.	Geba R. at Bafata.	Dr. W. J. Ansorge (C.).
6–10. Types.	Culufi R. „	„
11–13. Ad.	Pujehun, Sierra Leone.	N. W. Thomas, Esq. (P.).

Distinguished from *N. tænia* by the more posterior position of the dorsal fin and the lower number of scales in the lateral line.

9 *a*. NANNOCHARAX OGOENSIS.

Pellegr. Bull. Soc. Zool. France, xxxvi. 1911, p. 180.

Depth of body equal to length of head, $3\frac{1}{2}$ times in total length. Head much deeper than broad; snout a little shorter than eye, which is a little less than 3 times in length of head and a little exceeds interorbital width. Dorsal III 14, originating a little in front of base of ventral, longest rays about $\frac{3}{4}$ length of head. Anal III 7. Pectoral reaching root of ventral. Caudal forked, with pointed lobes. Caudal peduncle as long as deep. Scales 36 $\frac{5\frac{1}{2}}{7\frac{1}{2}}$, $4\frac{1}{2}$ between lateral line and

ventral. Yellowish brown, with a broad dark lateral band, passing through the eye, and a series of about 12 brown bars on the back; fins greyish.

Total length 42 millim.

Ogowe.—Type in Paris Museum.

Well characterized by the short body and caudal peduncle, the high number of rays in the dorsal fin, and the low number of scales in the lateral line.

18. **XENOCHARAX**, Gthr.

1. XENOCHARAX SPILURUS, Gthr.

Pappenh. Mitth. Zool. Mus. Berl. v. 1911, p. 513.

Add :—

18. Yg.	Sankuru R. at Kondue, Kasai.	M. E. Luja (C.) ; Luxemburg Museum (P.).

20. **CITHARINUS**, Cuv.

1. CITHARINUS CITHARUS, Geoffr.

Pellegr. Poiss. Bass. Tchad, p. 83, pl. vi. fig. 4 (1914).

Add :—

49–50. Yg.	Lagoon at Asaba, Low. Niger.	Major G. E. Bruce (P.).
51–52. Yg.	Aboina R., Cross R.	Capt. R. E. Gard'ner (P.).

2. CITHARINUS CONGICUS, Blgr.

Add :—

5. Yg.	Sankuru R. at Kondue, Kasai.	M. E. Luja (C.) ; Luxemburg Museum (P.).

3. CITHARINUS LATUS, M. & T.

Add :—

16. Yg.	Lagoon at Asaba, Low. Niger.	Major G. E. Bruce (P.).
17. Yg.	Geba R. at Bafata, Portug. Guinea.	Dr. W. J. Ansorge (C.).

5. CITHARINUS GIBBOSUS, Blgr.

Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 22.

Fam. CYPRINIDÆ.

1. **LABEO,** Cuv.

3. LABEO SENEGALENSIS, C. & V.

Pellegr. Poiss. Bass. Tchad, p. 85, pl. vii. fig. 1 (1914).

Add :—

21. Hgr.	Lagoon at Asaba, Low. Niger.	Major G. E. Bruce (P.).
22–23. Yg.	Culufi R. above Bafata, Portug. Guinea.	Dr. W. J. Ansorge (C.).

4. LABEO ALTIVELIS, Peters.

Add :—

14. Ad.	L. Bangwelu.	F. H. Melland, Esq. (P.).

5. LABEO WEEKSII, Blgr.

Add :—

2. Yg.	Sankuru R. at Kondue, Kasai.	M. E. Luja (C.) ; Luxemburg Museum (P.).

5*a*. LABEO BOULENGERI.

Vincig. Ann. Mus. Genova, (3) v. 1913, p. 299.

Depth of body $3\frac{3}{4}$ times in total length, length of head $5\frac{1}{2}$ times. Snout obtuse, shorter than postocular part of head; eye a little more than 3 times in length of head, twice in interorbital width ; no transverse plicæ on inner surface of lips ; no barbels. Dorsal III 11, last unbranched ray produced, much longer than head. Anal II 5. Pectoral a little longer than head, not reaching ventral. Caudal forked. Scales 38 $\frac{7\frac{1}{2}}{7\frac{1}{2}}$, $4\frac{1}{2}$ between lateral line and root of ventral. Uniform yellowish grey.

Total length 225 millim.

Berber R. (Ganana System), Gallaland.—Type in Genoa Museum.

Apparently allied to *L. weeksii.*

6. LABEO LINEATUS, Blgr.

Add :—

13. Yg.	Sankuru R. at Kondue, Kasai.	M. E. Luja (C.) ; Luxemburg Museum (P.).

7. LABEO ROSÆ, Stdr.

Gilchrist & Thompson, Ann. S. Afr. Mus. xi. 1913, p. 357.
Labeo transvaalensis, Methuen, Ann. Transv. Mus. 1911, p. 251, fig.

9. LABEO RUDDI, Blgr.

Gilchrist & Thompson, Ann. S. Afr. Mus. xi. 1913, p. 356.

9*a*. LABEO STICTOLEPIS.

Vinciguerra, Ann. Mus. Genova, (3) v. 1913, p. 297.

Depth of body $5\frac{1}{4}$ times in total length, length of head $5\frac{1}{2}$ times. Snout obtuse; eye in middle of head, $3\frac{3}{4}$ times in length of head, $1\frac{1}{2}$ times in interorbital width; no transverse plicæ on inner surface of lips; no barbels. Dorsal II 10, with straight edge, longest ray very nearly as long as head. Anal II 5. Pectoral nearly as long as head, not reaching ventral. Caudal forked. Scales 37 $\frac{5\frac{1}{2}}{5\frac{1}{2}}$, $4\frac{1}{2}$ between lateral line and root of ventral. Greenish grey above, yellowish beneath; a brown spot at the base of each scale.

Total length 310 millim.

Upper Ganala R. (Juba System), Gallaland.—Type in Genoa Museum.

11. LABEO LONGIPINNIS, Blgr.

Add:—

1–2. Ad. & yg.	Leopoldville.	Messrs. Dubois & Mouchet (C.).

12. LABEO COUBIE, Rüpp.

Pellegr. Poiss. Bass. Tchad, p. 86, pl. vii. fig. 2 (1914).

Add:—

47–55. Yg.	Aboina R., Cross R., S. Nigeria.	Capt. R. D. Gard'ner (P.).
56. Hgr.	Corbal R. at Gam Besse, Portug. Guinea.	Dr. W. J. Ansorge (C.).

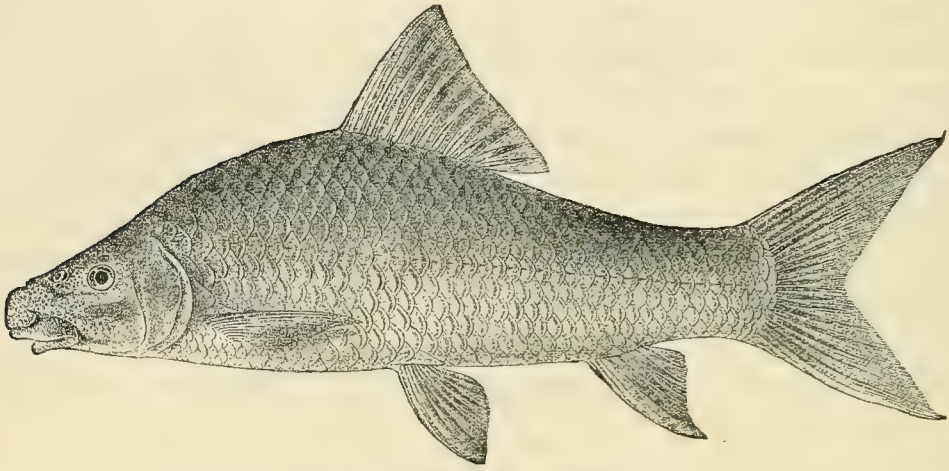
12*a*. LABEO RUBROPUNCTATUS.

Gilchrist & Thompson, Ann. S. Afr. Mus. xi. 1913, p. 355, fig.

Body compressed; its depth 3 to $3\frac{1}{2}$ times in total length, length of head $3\frac{9}{10}$ to $4\frac{1}{10}$ times. Width of head $\frac{3}{5}$ to $\frac{2}{3}$ its length; snout rounded, swollen, strongly projecting, longer than postocular part of

head and $\frac{2}{5}$ to $\frac{1}{2}$ length of head; eye perfectly lateral, situated in posterior half of head, 5 to 7 times in length of head; interorbital width $\frac{1}{2}$ to $\frac{3}{5}$ length of head; width of mouth, with lips, 2 to 3 times in length of head; lips with small papillæ forming transverse plicæ on inner side, upper lip not distinctly fringed on the edge, lower with papillæ on upper border and festooned on lower edge; rostral flap entire or very feebly denticulate, more or less detached at the sides; a small barbel, more or less hidden under folds of skin; tubercles on

Fig. 125.



Labeo rubropunctatus.
Type (Ann. S. Afr. Mus:). $\frac{2}{7}$.

snout, or their crater-like scars, much developed in adult. Dorsal III 11, equally distant from nostrils or eye and from base of caudal, border feebly concave or straight; longest ray $\frac{9}{10}$ to $1\frac{1}{8}$ (in young) length of head. Anal III 5; reaching caudal. Pectoral $\frac{3}{4}$ to $\frac{4}{5}$ length of head, not reaching ventral, the first ray of which falls below 4th or 5th branched ray of dorsal. Caudal deeply emarginate, crescentic when spread out; caudal peduncle $1\frac{1}{10}$ to $1\frac{1}{4}$ as deep as long. Scales 36–38 $\frac{6\frac{1}{2}-7\frac{1}{2}}{7-7\frac{1}{2}}$, 4–5 between lateral line and ventral, 18 round caudal peduncle. Dark brown or bronze-green above, lighter beneath, usually with a bright red spot on each scale, these spots forming longitudinal lines on the body; fins dark, caudal sometimes with a white edge.

Total length 400 millim.

Sabi and Crocodile Rivers, Transvaal.—Types in S. African Museum.

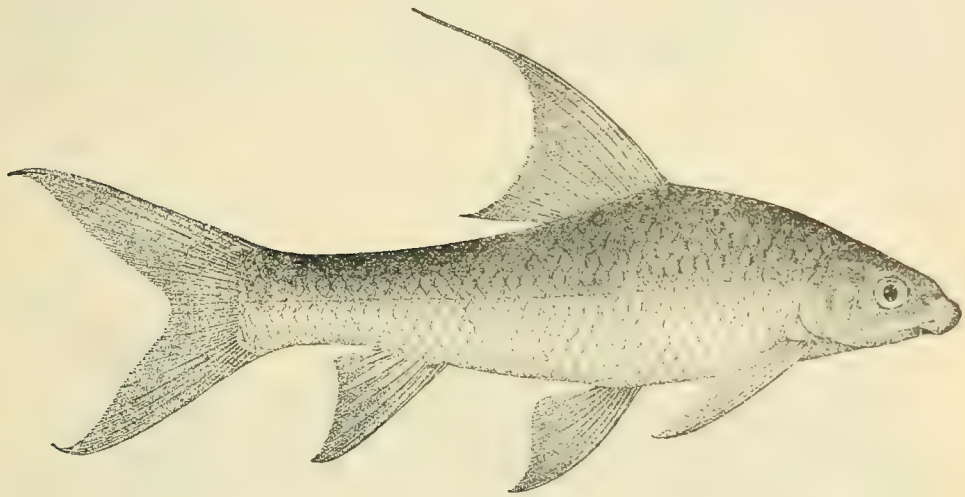
Near *L. coubie*, but caudal peduncle a little longer.

14 *a*. LABEO PERCIVALI.

Bouleng. Proc. Zool. Soc. 1912, p. 675, pl. lxxviii.

Body strongly compressed, its depth $3\frac{1}{3}$ to $3\frac{3}{4}$ times in total length. Head 4 to $4\frac{3}{4}$ times in total length, $1\frac{1}{2}$ to $1\frac{2}{3}$ times as long as broad; snout rounded, $\frac{1}{3}$ length of head; eye perfectly lateral, $2\frac{2}{3}$ (young) to $3\frac{2}{3}$ times in length of head; lips with small papillæ forming transverse

Fig. 126.



Labeo percivali.
Type (P. Z. S. 1912). $\frac{1}{2}$.

plicæ; lower lip with a fringe of large papillæ; rostral flap moderately large, with entire or indistinctly denticulate edge; a small barbel in the corner of the mouth. Dorsal III 10–11, equally distant from end of snout and from root of caudal, or slightly nearer the former, upper edge concave; last simple ray in adult males much produced, twice, or nearly twice, as long as head, not or but little longer than head in females and young. Anal III 5, reaching or nearly reaching root of caudal. Pectoral considerably longer than head in males, reaching base of ventral, the first ray of which falls below fourth or fifth branched ray of dorsal, shorter in females. Caudal deeply emarginate, with long pointed lobes. Caudal peduncle $1\frac{1}{3}$ to $1\frac{1}{2}$ times as long as deep. Scales 38–42 $\frac{7\frac{1}{2}}{8\frac{1}{2}-9\frac{1}{2}}$, 5 between lateral line and root of ventral, 18 round caudal peduncle. Silvery, back brownish grey; vertical fins greyish.

Total length 190 millim.

Eusso Nyiro, East of Lake Baringo, British East Africa.

1–10. Types. Eusso Nyiro. A. B. Percival, Esq. (P.).

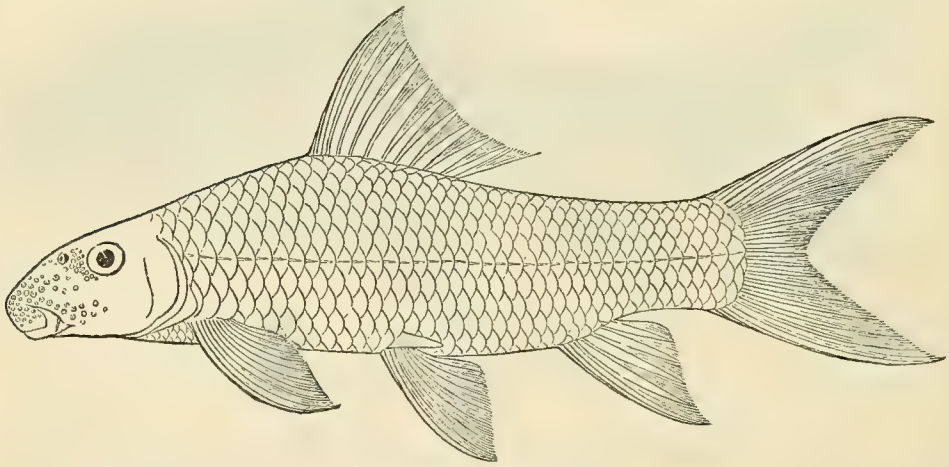
Distinguished from *L. neumanni* by the larger eye and the shape of the dorsal in the male.

17. LABEO VICTORIANUS, Blgr.

Add:—

14. Ad.	Jinja, Ripon Falls.	Dr. E. Bayon (C.) ; Genoa Museum (P.).
15. Ad.	Victoria Nile, between L. Kioja and Murchison Falls.	F. H. Melland, Esq. (P.).

Fig. 127.



Labeo batesii.
Type. $\frac{1}{2}$.

21 *a*. LABEO BATESII.

Bouleng. Ann. & Mag. N. H. (8) viii. 1911, p. 372.

Body strongly compressed, its depth $3\frac{2}{3}$ times in total length. Head 4 times in total length, its width $\frac{2}{3}$ its length; snout rounded, a little broader than long; eye supero-lateral, in second half of head, $4\frac{1}{2}$ times in length of head, slightly over twice in interorbital width; width of mouth, with lips, $\frac{1}{2}$ length of head; upper lip entire, lower feebly fringed, both with transverse plicæ on inner surface; rostral flap denticulate; a small barbel, hidden in folds of skin; snout covered with scars of nuptial tubercles. Dorsal III 10, equally distant from

nostrils and from caudal, border very feebly notched, longest ray as long as head. Anal II 5, reaching root of caudal. Pectoral as long as head, not reaching ventral, the first ray of which falls below the seventh of dorsal. Caudal deeply notched. Caudal peduncle as long as deep. Scales 37 $\frac{5\frac{1}{2}}{6\frac{1}{2}}$, 4 between lateral line and ventral, 16 round caudal peduncle. Olive above, whitish beneath; fins dark.

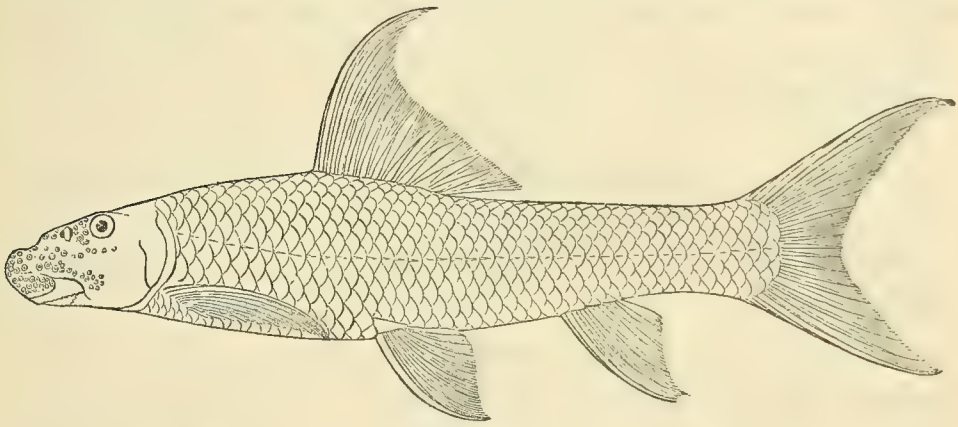
Total length 190 millim.

South Cameroon.

1. Type.	Kribi R.	G. L. Bates, Esq. (C.).

Distinguished from *L. cyclorhynchus* by the lower dorsal with fewer branched rays (10 instead of 11 or 12).

Fig. 128.



Labeo rocadasi.
Type. $\frac{1}{2}$.

24 *a*. LABEO ROCADASI.

Bouleng. Ann. & Mag. N. H. (8) vi. 1910, p. 544.

Body moderately compressed, its depth equal to or a little less than length of head, 4 to $4\frac{3}{4}$ times in total length. Head $1\frac{1}{2}$ to $1\frac{3}{4}$ times as long as broad; snout rounded or obtusely pointed, strongly projecting, more or less swollen, often with a more or less distinct curved transverse groove above, its length $\frac{1}{2}$, or a little more than $\frac{1}{2}$, length of head (a little less in the young); eye small, supero-lateral, 4 (young) to 6 times in length of head; interorbital width $\frac{2}{5}$ to $\frac{1}{2}$ length of head; width of mouth $\frac{1}{2}$, or a little less than $\frac{1}{2}$, length of head; lips strongly developed,

upper straight-edged, lower more or less expanded and bordered in front by a fringe of papillæ, the posterior border more or less distinctly festooned; inner surface of lips with small papillæ forming numerous transverse plicæ; rostral flap large, completely detached at the sides, the edge more or less distinctly festooned or denticulate; a small barbel, concealed under folds of skin; snout with more or less developed horny tubercles or their scars. Dorsal III 10 (rarely 9 or 11), equally distant from end of snout or nostrils and from caudal, upper edge concave, last simple ray and first branched ray longest, as long as head or a little longer. Anal III 5, not reaching root of caudal. Pectoral as long as or a little longer than head, not reaching ventral; latter inserted below middle of dorsal. Caudal deeply emarginate. Caudal peduncle $1\frac{2}{3}$ to 2 times as long as deep. Scales 39–42 $\frac{6\frac{1}{2}-7\frac{1}{2}}{7\frac{1}{2}-8\frac{1}{2}}$, 4–5 between lateral line and ventral, 16 round caudal peduncle. Dark olive above, whitish beneath; fins greyish or bright red; young with a dark spot on each scale and a black blotch on caudal peduncle.

Total length 250 millim.

Angola.

1–10. Types.	Quanza R. at Cambambe.	Dr. W. J. Ansorge (C.).
11–17. Types.	Lucalla R.	,,

Closely allied to *L. forskalii*; distinguished chiefly by the longer caudal peduncle.

24*b*. LABEO BOTTEGI.

Vinciguerra, Ann. Mus. Genova, (2) xvii. 1897, p. 358.

Was referred by me to the synonymy of *L. gregorii* (p. 321). Appears to be intermediate between *L. forskalii* and *L. cylindricus*.

Ganana R., Somaliland.—Type in Genoa Museum.

25. LABEO CYLINDRICUS, Peters.

Pietschmann, Jahrb. Nass. Ver. Nat. lxvi. 1913, p. 188; Gilchrist & Thompson, Ann. S. Afr. Mus. xi. 1913, p. 350.

Add:—

48. Ad.	Transvaal.	Dr. J. D. F. Gilchrist (P.).
49. Yg.	Mkata R., German E. Afr.	Dr. E. J. Baxter (C.).
50. Yg.	River near Kilosa (Wami System).	,,
51–54. Hgr. & yg.	Eusso Nyiro, Brit. E. Afr.	A. B. Percival, Esq. (P.).
55–56. Hgr. & yg.	Eusso Mara, ,, ,,	,,

57–66. Ad., hgr., & yg.	Saya, Brit. E. Africa.	A. B. Percival, Esq. (P.).
67. Yg.	Lorian Swamp, Brit. E. Afr.	,,

The specimen from the Zambesi at Victoria Falls, referred by Gilchrist and Thompson (*l. c.*) to *L. forskalii*, probably belongs to this species.

27. LABEO GREENII, Blgr.

Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 23.

28. LABEO LUKULÆ, Blgr.

Bouleng. Ann. Mus. Congo, Zool. ii. 3, p. 11 (1912),

Add :—

Depth of body nearly equal to length of head, 4 to $4\frac{1}{2}$ times in total length. Eye $4\frac{1}{2}$ (young) to 7 times in length of head. Exceptionally 9 branched dorsal rays. Scales 34–36 $\frac{5\frac{1}{2}-6\frac{1}{2}}{6\frac{1}{2}-7\frac{1}{2}}$, $3\frac{1}{2}$–4, 12.

1–5. Ad., hgr., & yg.	Loango R. at N'Kutu.	Dr. W. J. Ansorge (C.).
6–7. Ad.	Lebuzi R. (Chiloango) at Kuka Muno.	,,
8–9. Ad.	Lebuzi R. (Chiloango) at Boma Vonde.	,, ,,
10–13. Ad. & hgr.	Luali R. (Chiloango) at Buco Zau.	,,

The type-specimen is not from the Upper Congo, as stated on p. 336, but from the Lukula or Luculla River, an affluent of the Chiloango in the Belgian Congo.

29. LABEO ANNECTENS, Blgr.

Add :—

14. Hgr.	Ngomo, Ogowe.	Rev. E. Haug (C.); Paris Museum (E.).
15–18. Yg.	Bumba R. at Assobam, S. Cameroon.	G. L. Bates, Esq. (C.).

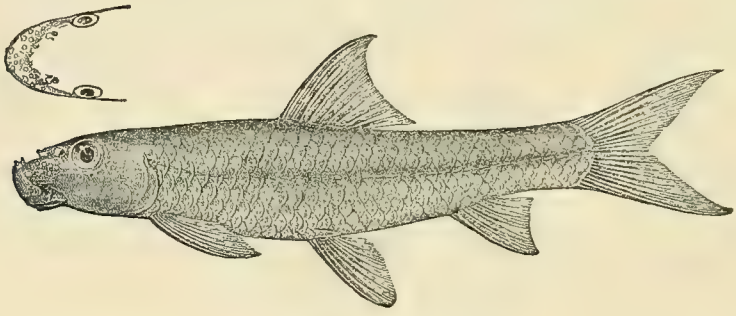
29 *a*. LABEO PARVULUS.

Gilchrist & Thompson, Ann. S. Afr. Mus. xi. 1913, p. 352, fig.

Body compressed, its depth $4\frac{4}{5}$ times in total length; length of head $3\frac{9}{10}$ times. Width of head $\frac{2}{3}$ its length; snout swollen, prominent, projecting beyond mouth, $2\frac{1}{6}$ times in length of head; eye $4\frac{1}{10}$ times in

length of head, supero-lateral, a little nearer to gill-opening than to end of snout, $1\frac{3}{4}$ times in interorbital width; width of mouth, with lips, twice in length of head; upper lip with feeble denticulation, inner surface with feeble transverse plicæ; lower lip with a row of papillæ on upper border, posterior border festooned; rostral flap detached at sides, feebly denticulated; anterior nostril with a flap; a single barbel on each side, $\frac{3}{10}$ diameter of eye, more or less concealed under folds of skin; a deep, curved, transverse depression in front of nostrils, and behind it a line of pearl-like tubercles; a patch of similar tubercles, disposed in two rows of 4 and 2, on end of snout, with a similar patch adjoining on each side. Dorsal III 9, equally distant from nostrils and from root of caudal, border concave; longest ray slightly longer than head. Anal III 5, not reaching caudal. Pectoral $\frac{4}{5}$ length of head, not

Fig. 129.



Labeo parvulus.
Type (Ann. S. Afr. Mus.).

reaching ventral; base of latter below anterior rays of dorsal. Caudal deeply forked, with acutely pointed lobes. Caudal peduncle $1\frac{1}{3}$ times as long as deep. Scales $35\ \frac{4\frac{1}{2}}{7\frac{1}{2}}$, $3\frac{1}{2}$ between lateral line and ventral, 14 round caudal peduncle. Olive-brown, darker above than below; a yellowish patch on occiput and an orange blotch on throat and on lower opercular border; a darkish lateral streak in life.

Total length 72 millim.

Crocodile R., Transvaal.—Type in S. African Museum, Cape Town.

30. LABEO CHARIENSIS, Pellegr.

Pellegr. Poiss. Bass. Tchad, p. 87, pl. viii. (1914).

Add:—

1–5. Ad. & hgr.	Peramie R., Gold Coast.	Dr. H. G. F. Spurrell (P.).

32. LABEO OBSCURUS, Pellegr.

Add :—

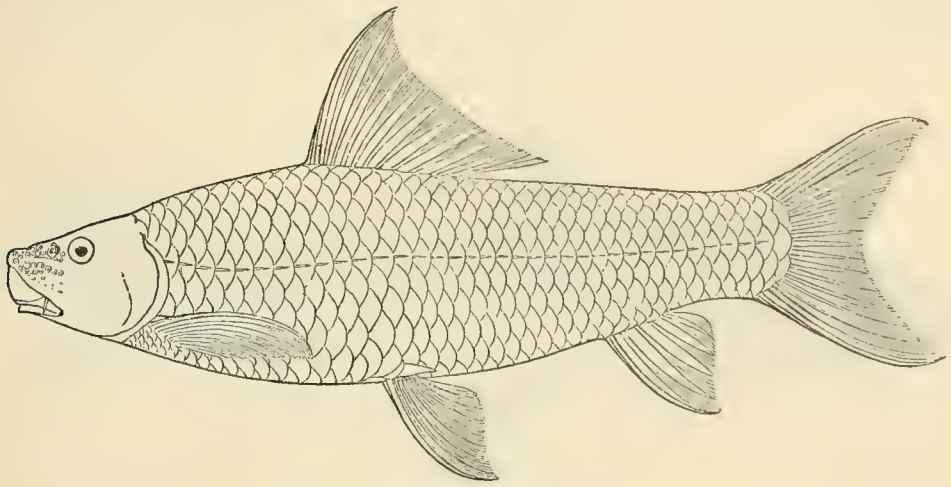
1. Yg. N. Sherbo district, Sierra Leone. N. W. Thomas, Esq. (P.).

30. LABEO OGUNENSIS.

Bouleng. Ann. & Mag. N. H. (8) vi. 1910, p. 425.

Body rather strongly compressed, its depth $3\frac{3}{4}$ to 4 times in total length. Head $1\frac{2}{5}$ times as long as broad, its length $4\frac{1}{2}$ to $4\frac{2}{3}$ times in total length; snout rounded, very prominent, with nuptial tubercles of unequal size; eye supero-lateral, in middle of length of head, 5 to $5\frac{1}{2}$ times in length of head, $2\frac{1}{2}$ times in interorbital width; inner surface of lips with numerous transverse plicæ; a minute barbel, hidden in the

Fig. 130.



Labeo ogunensis.
Type. $\frac{2}{3}$.

folds at side of mouth. Dorsal III 10, slightly nearer caudal than end of snout, strongly notched; longest rays as long as or slightly longer than head. Anal II 5, longest ray $\frac{3}{4}$ to $\frac{4}{5}$ length of head. Pectoral as long as head, not reaching ventral; latter below middle of dorsal. Caudal deeply forked. Caudal peduncle as long as deep. Scales 34–35 $\frac{5\frac{1}{2}}{6\frac{1}{2}}$, $3\frac{1}{2}$–4 between lateral line and root of ventral, 12 round caudal peduncle. Dark greenish above and on the fins, muddy greenish white beneath.

Total length 170 mm.

Lagos.

1–2. Types. Ogun R. at Aro. Major G. E. Bruce (P.).

Distinguished from *L. obscurus* by the smaller eye and one scale more in a transverse series above the lateral line.

33. LABEO UMBRATUS, A. Smith.

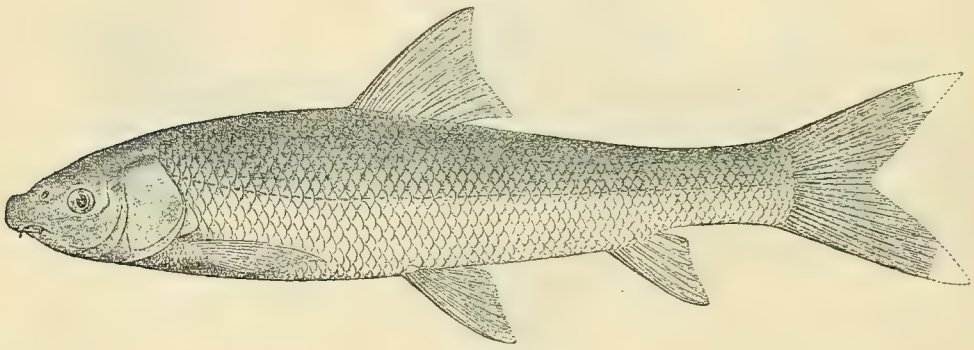
Gilchrist & Thompson, Ann. S. Afr. Mus. xi. 1913, p. 362.

33 *a*. LABEO STENNINGI.

Gilchrist & Thompson, t. c. p. 363, fig.

Depth of body $4\frac{2}{5}$ times in total length, length of head $4\frac{1}{10}$ times. Width of head a little more than $\frac{3}{5}$ its length; snout rounded and feebly projecting, shorter than postocular part of head and $2\frac{7}{10}$ times in length of head; eye lateral, nearer to end of snout than to gill-opening, $6\frac{4}{7}$ times in length of head and nearly $3\frac{1}{7}$ times in interorbital width; mouth small, its width, with lips, $\frac{3}{10}$ length of head; lips feebly developed, upper with a short fringe of papillæ on lower margin; rostral

Fig. 131.



Labeo stenningi.
Type (Ann. S. Afr. Mus.). $\frac{5}{9}$.

flap entire, slightly emarginate; two inconspicuous barbels on each side, posterior slightly longer than anterior and slightly more thad $\frac{1}{4}$ diameter of eye. Dorsal III 9, equidistant from nostrils and from root of caudal, upper border slightly concave; longest branched ray $\frac{4}{5}$ length of head. Anal III 5, not reaching caudal. Pectoral nearly $\frac{3}{4}$ length of head, not reaching ventral; first ray of latter below 4th branched ray of dorsal, Caudal deeply forked. Caudal peduncle $1\frac{5}{6}$ times as long as deep. Scales radiately striated, 60 $\frac{11\frac{1}{2}}{13\frac{1}{2}}$, $7\frac{1}{2}$ between lateral line and root of ventral, 28 round caudal peduncle. Silvery, dark above, lighter below the lateral line.

Total length 190 millim.

Potchefstroom, Transvaal.—Type in S. African Museum, Cape Town.

34. LABEO CAPENSIS, A. Smith.

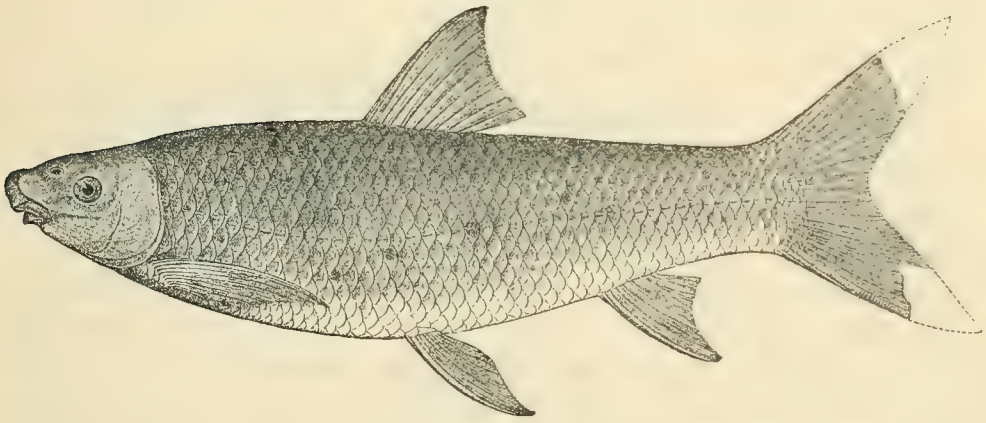
Gilchrist & Thompson, t. c. p. 361.

34*a*. LABEO RUBROMACULATUS.

Gilchrist & Thompson, t. c. p. 359, fig.

Body compressed, its depth $3\frac{1}{2}$ times in total length, length of head $4\frac{3}{5}$ times. Head $1\frac{3}{5}$ times as long as broad; snout rounded, feebly extending beyond upper lip, longer than postocular part of head and $2\frac{1}{8}$ times in length of head; eye lateral, $6\frac{5}{8}$ times in length of head; interorbital width a little more than $\frac{1}{2}$ length of head; width of mouth, with lips, a little more than $\frac{2}{5}$ length of head; lips rather feebly developed,

Fig. 132.



Labeo rubromaculatus.
Type (Ann. S. Afr. Mus.). $\frac{5}{9}$.

upper lip entire, lower feebly fringed with rounded papillæ and with the lower margin festooned; rostral flap with a denticulate fringe; two barbels on each side, the anterior $\frac{3}{8}$ diameter of eye, the posterior $\frac{5}{8}$. Dorsal III 9, equally distant from nostrils and from root of caudal, border concave; longest ray nearly as long as head. Anal II 5, not reaching caudal. Pectoral about as long as head, not reaching ventral; base of latter below 3rd or 4th branched ray of dorsal. Caudal deeply notched, crescentic, with pointed lobes. Caudal peduncle $1\frac{1}{10}$ times as long as deep. Scales $43\frac{8\frac{1}{2}}{9\frac{1}{2}}$, $6\frac{1}{2}$ between lateral line and root of ventral, 20 round caudal peduncle. Dark olive-brown above, silvery beneath;

tail of a greenish tinge; scales dark at the base. In life with 6 or 8 gold-red spots on the body.

Total length 243 millim.

Zululand.—Type in S. African Museum, Cape Town.

Very closely allied to *L. capensis*, but barbels shorter and only 9 branched rays in the dorsal.

35. LABEO ANSORGII, Blgr.

Bouleng. Ann. & Mag. N. H. (8) vi. 1910, p. 545.

Except for the presence of an anterior small and often quite rudimentary barbel, this species agrees very closely with *L. forskalii*. Grows to a length of 190 millim.

Add :—

3–4. Hgr. & yg.	Quanza R. at Cambambe.	Dr. W. J. Ansorge (C.).
5–14. Ad., hgr., & yg.	Bengo R. at Cabiri.	,,
15–18. Ad., hgr., & yg.	L. Kilunda, Bengo R.	,,
19–23. Ad. & hgr.	Bengo R. at Quifandongo.	,,

35*a*. LABEO NIGRICANS.

Bouleng. Cat. Poiss. Congo Mus. Luxemb. no. 2, p. 5 (1911).

Depth of body equal to or a little greater than length of head, 3 times in total length. Snout broad and rounded, a little longer than eye, which is perfectly lateral, as long as postocular part of head and $\frac{1}{2}$ interocular width; width of mouth equal to length of snout; papillæ on inner surface of lips forming oblique plicæ; several rows of rounded-subconical papillæ on the edge of the lower lip; two barbels on each side, anterior very short, the posterior $\frac{1}{3}$ to $\frac{1}{2}$ diameter of eye. Dorsal III 12–13, with straight or convex border; longest ray as long as head. Anal III 5, extending beyond root of caudal. Pectoral as long as or a little shorter than head, not reaching ventral. Caudal deeply notched. Caudal peduncle much deeper than long. Scales 32–37 $\frac{5\frac{1}{2}}{5\frac{1}{2}-6\frac{1}{2}}$, 4–4$\frac{1}{2}$ between lateral line and ventral, 16 round caudal peduncle. Dark brown or blackish; fins black.

Total length 65 millim.

Congo.—Types in Luxemburg Museum.

1–3. Types.	Sankuru R. at Kondue, Kasai.	M. E. Luja (C.); Luxemburg Museum (P.).

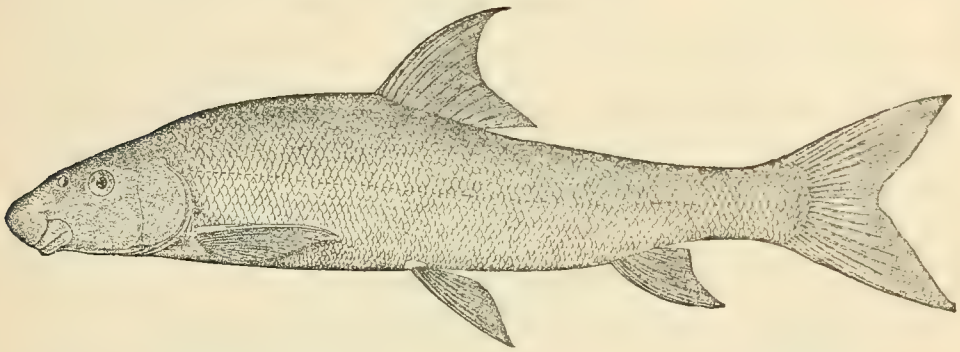
The only species combining two pairs of barbels and a straight-edged or convex dorsal fin. Should perhaps be placed near *L. longipinnis*.

36 *a*. LABEO SEEBERI.

Gilchrist & Thompson, Ann. & Mag. N. H. (8) viii. 1911, p. 477, and Ann. S. Afr. Mus. xi. 1913, p. 347, fig.

Depth of body nearly 5 times in total length, length of head $4\frac{1}{2}$ times; width of head nearly $\frac{3}{5}$ its length. Snout prominent, projecting, rounded and slightly pointed, longer than postocular part of head and $2\frac{1}{10}$ times in length of head; eye lateral, nearer gill-opening than to end of snout, 7 times in length of head and $3\frac{1}{5}$ times in interorbital width; width of mouth, with lips, a little more than $\frac{1}{2}$ length of head; lips well developed, with transverse plicæ on inner surface, fringed with papillæ, the lower lip with prominent papillæ scattered on it and

Fig. 133.



Labeo seeberi.
Type (Ann. S. Afr. Mus.). $\frac{5}{12}$.

festooned on lower edge; rostral flap fringed; no visible barbel. Dorsal IV 9, nearly equidistant from nostril and base of caudal, upper border emarginate; longest branched ray about $\frac{4}{5}$ length of head. Anal III 5, not reaching base of caudal. Pectoral $\frac{4}{5}$ length of head, not reaching ventral, which is inserted below 4th branched ray of dorsal. Caudal deeply forked, lower lobe pointed and longer than upper. Caudal peduncle nearly twice as long as deep. Scales 83 $\frac{20}{30}$, 16 between lateral line and root of ventral, about 32 round caudal peduncle. Dark bluish brown above, light-coloured on belly; body covered with minute dark spots.

Total length 268 millim.

Olifants River, Transvaal.—Type in S. African Museum, Cape Town.

Distinguished from all other African species by the very small scales.

2. DISCOGNATHUS, Heck.

1. DISCOGNATHUS DEMBEENSIS, Rüpp.

Add:—

20. Hgr.	Eusso Nyiro, Brit. E. Africa.	A. B. Percival (P.).
21–27. Ad. & hgr.	Eusso Mara, „ „	„
28–37. Ad. & hgr.	Saya, „ „	„

6. DISCOGNATHUS HINDII, Blgr.

Add:—

21–27. Ad. & hgr.	Rumuruti, Waso Narok (Lorian Swamp).	Sir F. J. Jackson (P.).

3. VARICORHINUS, Rüpp.

Acapoëta, Cockerell, Proc. Biol. Soc. Washington, xxiii. 1911, p. 149.

As the number of species has been more than doubled since the publication of the first volume of this Catalogue, it is advisable to give a new key to their identification.

Synopsis of the Species.

I. Two pairs of barbels; last simple ray of dorsal strong and ossified.

A. Spine of dorsal shorter than head; 9 branched rays in dorsal; posterior barbel as long as eye.

Sc. $29\frac{4\frac{1}{2}}{4\frac{1}{2}}$, 2, 12; caudal peduncle not longer than deep; ventrals below anterior soft rays of dorsal . *V. ansorgii*, Blgr.

Sc. $31\frac{4\frac{1}{2}}{4\frac{1}{2}}$, $2\frac{1}{2}$, 12; caudal peduncle much longer than deep; ventrals below middle of dorsal . . . . *V. brucii*, Blgr.

B. Spine of dorsal longer than head; 10 (rarely 9 or 11) branched rays in dorsal; posterior barbel shorter than eye.

Sc. 30–35 $\frac{4\frac{1}{2}\text{–}5\frac{1}{2}}{4\frac{1}{2}}$, 2–$2\frac{1}{2}$, 12–14; mouth straight, with rounded papillæ in front and behind; posterior barbel about $\frac{1}{2}$ diameter of eye; ventrals below anterior rays of dorsal . . . . . *V. ensifer*, Blgr.

Sc. $41\frac{7\frac{1}{2}}{6\frac{1}{2}}$, 4, 16; mouth curved, without papillæ; posterior barbel $\frac{2}{3}$ diameter of eye; ventrals below middle of dorsal . . . . . *V. stenostoma*, Blgr.

II. Barbels absent or reduced to one pair.

A. Less than 50 scales in lateral line.

1. Last simple ray of dorsal strong and ossified, followed by 9 or 10 (rarely 11) soft rays.

a. Barbel $\frac{1}{2}$ diameter of eye; rounded papillæ in front of and behind mouth.

Sc. 35 $\frac{5\frac{1}{2}}{5\frac{1}{2}}$, 3, 14; ventrals below anterior rays of dorsal . . . . . *V. varicostoma*, Blgr.

b. Barbel minute or absent.

α. Ventrals below middle of dorsal.

Sc. 31 $\frac{4\frac{1}{2}}{4\frac{1}{2}}$, $2\frac{1}{2}$, 12; eye $4\frac{2}{3}$ times in length of head; barbel present . . . . . *V. tornieri*, Stdr.

Sc. 28–31 $\frac{4\frac{1}{2}}{4\frac{1}{2}}$, $2\frac{1}{2}$, 12; eye more than 4 times in length of head; barbel absent . . . . . *V. sandersi*, Blgr.

Sc. 30–35 $\frac{4\frac{1}{2}-5\frac{1}{2}}{5\frac{1}{2}}$, $3–3\frac{1}{2}$, 12–14; eye not more than 4 times in length of head; barbel present . . . . *V. steindachneri*, Blgr.

β. Ventrals below anterior soft rays of dorsal.

* Snout only a little broader than long.

Sc. 34–36 $\frac{5\frac{1}{2}}{5\frac{1}{2}}$, 3, 12; eye $3\frac{1}{4}$ times in length of head . *V. ruandæ*, Pappenh.

** Snout much broader than long.

Sc. 30–35 $\frac{4\frac{1}{2}-5\frac{1}{2}}{4\frac{1}{2}-5\frac{1}{2}}$, 2–3, 12; eye 4 to 6 times in length of head; snout with tubercles . . . . . *V. beso*, Rüpp.

Sc. 34–35 $\frac{6\frac{1}{2}}{5\frac{1}{2}}$, 3, 12; eye 4 or 5 times in length of head; no tubercles on snout . . . . . *V. platystoma*, Pappenh.

Sc. 34–39 $\frac{5\frac{1}{2}-6\frac{1}{2}}{5\frac{1}{2}-6\frac{1}{2}}$, $3–3\frac{1}{2}$, 12–14; eye 3 to $3\frac{1}{3}$ times in length of head; very small tubercles on snout . *V. latirostris*, Blgr.

2. Last simple ray of dorsal slender and flexible. [& Thomps.

Sc. 34–35 $\frac{5\frac{1}{2}-6}{6-6\frac{1}{2}}$, $2\frac{1}{2}$, 14; D. III 8–9; no barbel . . . *V. neelspruitensis*, Gilchr.

Sc. 39–40 $\frac{6\frac{1}{2}-7\frac{1}{2}}{10}$, $3\frac{1}{2}$, 12; D. III 10; a minute barbel . *V. ruwenzorii*, Pellegr.

Sc. 43–46 $\frac{8\frac{1}{2}-9\frac{1}{2}}{9\frac{1}{2}-10\frac{1}{2}}$, 4–5, 16; D. IV 10–11; a minute barbel . . . . . *V. maroccanus*, Gthr.

B. More than 50 scales in lateral line; last simple ray of dorsal strong and ossified.

Sc. 64–70 $\frac{13\frac{1}{2}-14\frac{1}{2}}{14\frac{1}{2}-15\frac{1}{2}}$, 9–10, 32–34; D. IV 8–9; a minute barbel . . . . . *V. tanganicæ*, Blgr.

2. VARICORHINUS BRUCII, Blgr.

Gilchrist & Thompson, Ann. S. Afr. Mus. xi. 1913, p. 364.
Barbus oliphanti, Keilhack, Mitth. Zool. Mus. Berl. v. 1910, p. 101.

Add :—

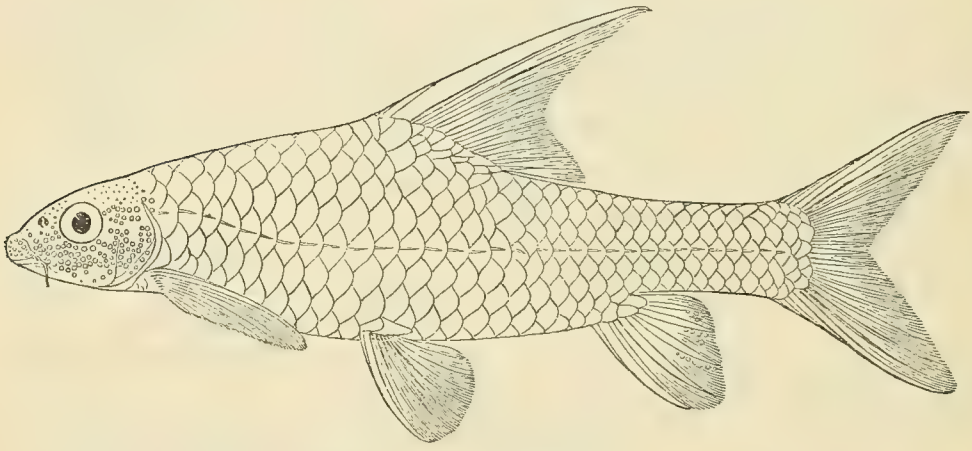
2. Ad.	Transvaal.	Dr. J. D. F. Gilchrist (P.).

2 *a*. VARICORHINUS ENSIFER.

Boulenger, Ann. & Mag. N. H. (8) vi. 1910, p. 545.

Depth of body $3\frac{1}{2}$ to 4 times in total length, length of head $4\frac{1}{3}$ to $5\frac{1}{3}$ times. Snout rounded, a little broader than long, as long as or a little longer than eye, which is about 3 times in length of head and $1\frac{1}{2}$ to $1\frac{2}{3}$ times in interorbital width; mouth straight, its width about $\frac{1}{3}$ length of head, with a thick upper lip covered with round papillæ; similar

Fig. 134.



Varicorhinus ensifer.
Type. $\frac{2}{3}$.

papillæ behind the cutting-edge of the lower jaw; two barbels on each side, anterior minute, posterior about $\frac{1}{2}$ diameter of eye. Males with large horny spinose tubercles on sides of head and end of snout. Dorsal IV 10 (rarely 9 or 11), equally distant from eye and from caudal; last simple ray very strong, bony, not serrated, straight, $1\frac{1}{2}$ to $2\frac{1}{4}$ times length of head; border of fin strongly emarginate. Anal III 5, longest ray a little shorter or a little longer than head, sometimes reaching caudal, with nuptial tubercles in the males. Pectoral as long as or a little longer than head, not reaching ventral; latter inserted below anterior

rays of dorsal. Caudal deeply forked. Caudal peduncle $1\frac{1}{2}$ to $1\frac{2}{3}$ times as long as deep. Scales 30–35 $\frac{4\frac{1}{2}-5\frac{1}{2}}{4\frac{1}{2}}$, 2–$2\frac{1}{2}$ between lateral line and ventral, 12–14 round caudal peduncle. Olive-brown above, white beneath; fins bright red, edged with greyish.

Total length 195 millim.

Angola.

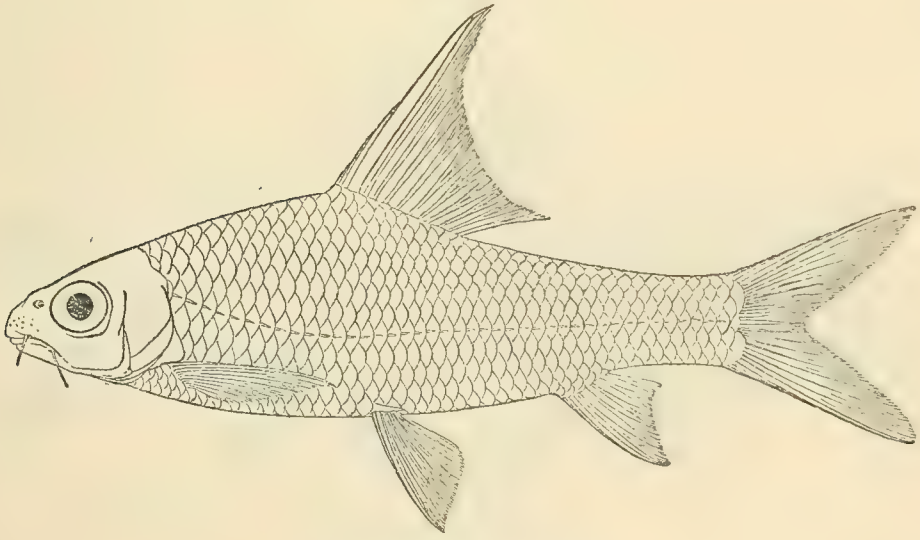
1–11. Types. Lucalla R. at Lucalla. Dr. W. J. Ansorge (C.).

2*b*. VARICORHINUS STENOSTOMA.

Bouleng. Ann. & Mag. N. H. (8) vi. 1910, p. 546.

Depth of body $3\frac{1}{4}$ times in total length, length of head $4\frac{1}{4}$ times. Snout rounded, a little broader than long, a little shorter than eye,

Fig. 135.



Varicorhinus stenostoma.
Type.

which is 3 times in length of head and equals interorbital width; mouth curved, its width $\frac{2}{7}$ length of head; no papillæ round the mouth; two barbels on each side, anterior about $\frac{1}{2}$ diameter of eye, posterior $\frac{2}{3}$. Dorsal IV 10, equally distant from centre of eye and from caudal; last simple ray very strong, bony, not serrated, straight, $1\frac{1}{3}$ times length of head; border of fin strongly emarginate. Anal III 5, longest ray $\frac{2}{3}$ length of head. Pectoral as long as head, not reaching ventral; latter inserted below middle of dorsal. Caudal deeply forked. Caudal

peduncle $1\frac{2}{3}$ times as long as deep. Scales 41 $\frac{7\frac{1}{2}}{6\frac{1}{2}}$, 4 between lateral line and ventral, 16 round caudal peduncle. Brownish above, each scale with a dark spot, white beneath; fins whitish.

Total length 105 millim.

Angola.

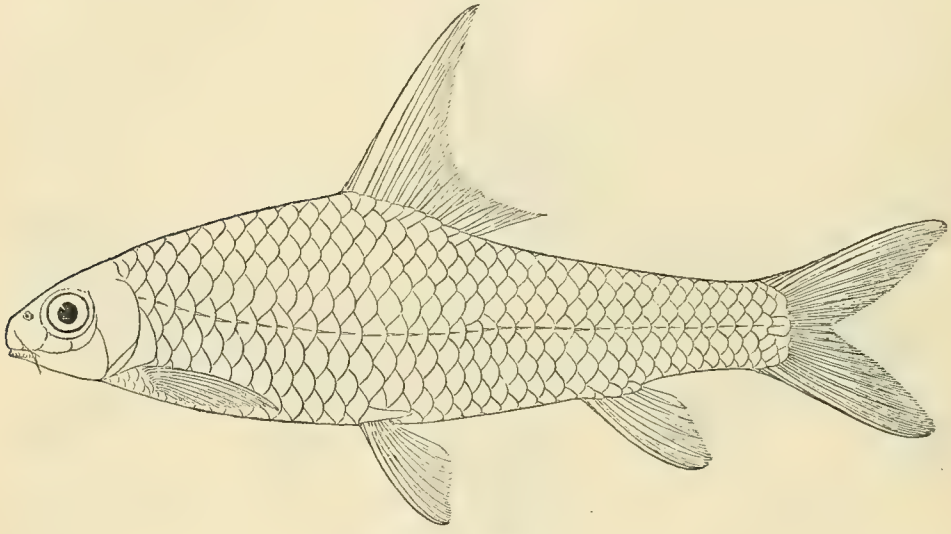
1. Type. Lucalla R. at Lucalla. Dr. W. J. Ansorge (C.).

2 *c*. VARICORHINUS VARICOSTOMA.

Bouleng Ann. & Mag. N. H. (8) vi. 1910, p. 546.

Depth of body $3\frac{2}{3}$ times in total length, length of head 5 times. Snout rounded, much broader than long, as long as eye, which is 3 times in length of head and $1\frac{2}{3}$ times in interorbital width; mouth

Fig. 136.



Varicorhinus varicostoma.
Type. $\frac{2}{3}$.

straight, its width $\frac{1}{3}$ length of head, with a thick upper lip covered with round papillæ; smaller papillæ behind the cutting-edge of the lower jaw; a single barbel on each side, at angle of mouth, $\frac{1}{2}$ diameter of eye. Dorsal IV 10, equally distant from centre of eye and from root of caudal; last simple ray very strong, bony, not serrated, straight, $1\frac{1}{2}$ times length of head; border of fin strongly emarginate. Anal III 5, longest ray as long as head. Pectoral as long as head, not reaching ventral; latter inserted below anterior rays of dorsal. Caudal deeply forked. Caudal

peduncle $1\frac{1}{2}$ times as long as deep. Scales 35 $\frac{5\frac{1}{2}}{5\frac{1}{2}}$, 3 between lateral line and ventral, 14 round caudal peduncle. Dark brown above, yellowish beneath; fins dark grey.

Total length 170 millim.

Angola.

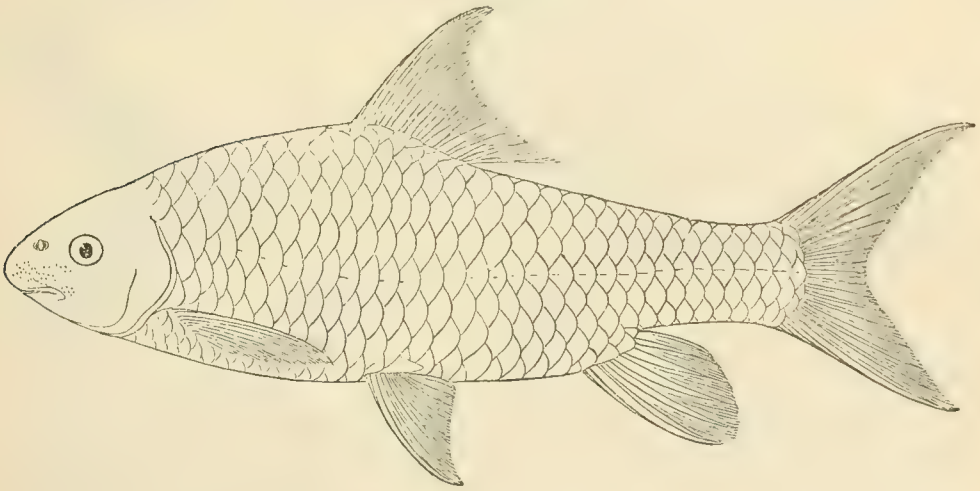
1. Type. Lucalla R. at Lucalla. Dr. W. J. Ansorge (C.).

3*a*. VARICORHINUS SANDERSI.

Boulenger. Ann. Mus. Congo, Zool. ii. 3, p. 11, pl. xix. fig. 1 (1912).

Depth of body $2\frac{2}{3}$ to $3\frac{1}{4}$ times in total length, length of head $4\frac{1}{2}$ to 5 times. Snout rounded, much broader than long, about $\frac{1}{3}$ length of

Fig. 137.



Varicorhinus sandersi.
Type. $\frac{2}{5}$.

head; eye $3\frac{1}{2}$ (young) to $5\frac{1}{2}$ times in length of head, interorbital width $1\frac{3}{4}$ to 2 times; mouth feebly curved, its width $\frac{2}{3}$ (young) to $\frac{4}{5}$ that of head; no barbels; numerous small tubercles on sides of head. Dorsal III 10 (rarely 9), equally distant from nostrils or eye and from root of caudal; last simple ray very strong, bony, not serrated, ossified part $\frac{3}{5}$ to $\frac{4}{5}$ length of head; border of fin strongly emarginate. Anal III 5, sometimes reaching base of caudal. Pectoral as long as or a little longer than head, not reaching ventral; latter inserted below

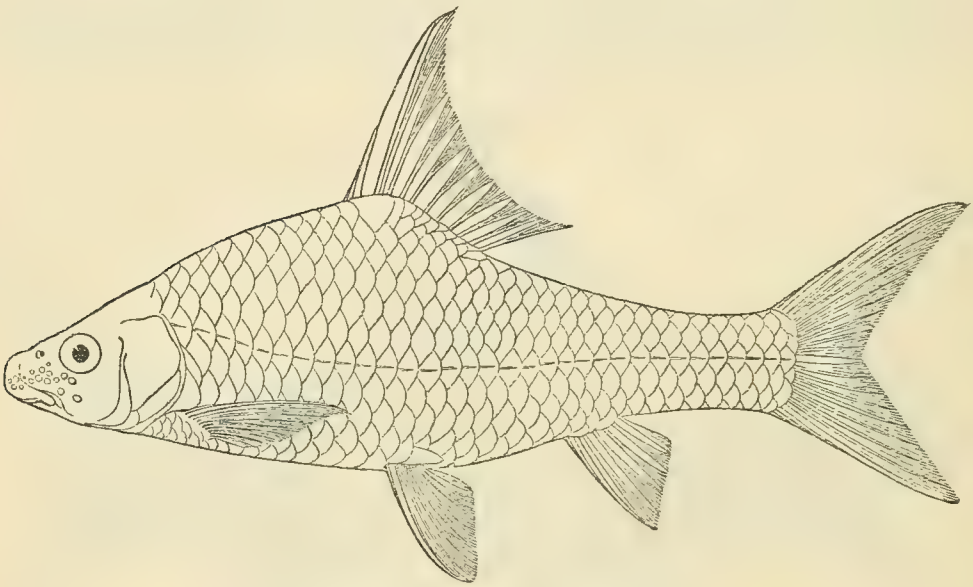
middle of dorsal. Caudal deeply forked. Caudal peduncle about $1\frac{1}{2}$ times as long as deep. Scales 28–31 $\frac{4\frac{1}{2}}{4\frac{1}{2}}$, $2\frac{1}{2}$ between lateral line and ventral, 12 round caudal peduncle. Dark olive-brown above, pinkish on the sides below the lateral line, white beneath; fins dark grey.

Total length 370 millim.

Chiloango System.

1–4. Types.	Loango R. at N'Kutu.	Dr. W. J. Ansorge (C.).
5. Type.	Luali R. at Buco Zau.	„

Fig. 138.



Varicorhinus steindachneri.
Type. $\frac{1}{2}$.

3*b*. VARICORHINUS STEINDACHNERI.

Bouleng. Ann. & Mag. N. H. (8) vi. 1910, p. 547.

Barbus (*Varicorhinus*) *steindachneri*, Pappenh. Mitth. Zool. Mus. Berl. v. 1911, p. 517.

Depth of body 3 to $3\frac{1}{2}$ times in total length, length of head $3\frac{1}{2}$ to $4\frac{1}{2}$ times. Snout rounded, a little broader than long, as long as or a little longer than eye, which is 3 (young) to 4 times in length of head and $1\frac{1}{3}$ to $1\frac{1}{2}$ times in interorbital width; mouth straight, its width about $\frac{2}{5}$ length of head; a minute, sometimes almost imperceptible, barbel at angle of mouth; a few conical tubercles on sides of snout and below eye.

Dorsal IV 10 (rarely 9 or 11), equally distant from anterior border or centre of eye and from root of caudal; last simple ray very strong, bony, not serrated, straight or very feebly curved, 1 to $1\frac{1}{3}$ times length of head; border of fin strongly emarginate. Anal III 5, longest ray $\frac{2}{3}$ to $\frac{5}{6}$ length of head. Pectoral as long as or a little shorter than head, not reaching ventral; latter inserted below middle of dorsal. Caudal deeply forked. Caudal peduncle $1\frac{1}{2}$ to $1\frac{2}{3}$ times as long as deep. Scales 30–35 $\frac{4\frac{1}{2}-5\frac{1}{2}}{5\frac{1}{2}}$, 3–$3\frac{1}{2}$ between lateral line and ventral, 12 (rarely 14) round caudal peduncle. Brown above, whitish beneath; fins dark grey, often tinged with red.

Total length 190 millim.

Angola.

1–16. Types.	Lucalla R. at Lucalla.	Dr. W. J. Ansorge (C.).
17. Skel.	,, ,,	,,

Recorded from the Benito River, Spanish Guinea, by Pappenheim, *l. c.*

3 *c*. VARICORHINUS RUANDÆ.

Pappenh. in Schubotz, Wiss. Ergebn. Deutsch. Z.-Afr. Exped., Zool. iii. p. 236, pl. i. fig. 1 (1914).

Depth of body $3\frac{3}{5}$ times in total length, length of head 5 times. Snout rounded, $1\frac{1}{4}$ times as long as broad, as long as eye, which is $3\frac{1}{4}$ times in length of head and $1\frac{1}{2}$ times in interorbital width; mouth nearly straight, its width 3 times in length of head; a rudimentary barbel; no tubercles on the snout. Dorsal IV 10, nearer occiput than root of caudal; last simple ray very strong, bony, not serrated, a little longer than head; border of fin strongly emarginate. Anal III 5, longest ray a little shorter than head. Pectoral a little shorter than head. Ventral below anterior soft rays of dorsal. Caudal deeply forked. Caudal peduncle $1\frac{2}{3}$ times as long as deep. Scales 34–36 $\frac{5\frac{1}{2}}{5\frac{1}{2}}$, 3 between lateral line and ventral, 12 round caudal peduncle. Grey, back darker; fins dark grey.

Total length 150 millim;

Mkunga near Ruasa, Ruanda, German East Africa.—Types in Berlin Museum.

4*a*. VARICORHINUS PLATYSTOMA.

Pappenh. in Schubotz, t. c. p. 236, pl. i. fig. 2.

Depth of body $3\frac{1}{4}$ to $3\frac{1}{3}$ times in total length, length of head $4\frac{1}{3}$ to $4\frac{2}{3}$ times. Snout rounded, $1\frac{1}{2}$ to nearly 2 times as long as broad, as long as eye, which is 4 times in length of head and $1\frac{3}{4}$ to $2\frac{1}{2}$ times in interorbital width; mouth nearly straight, its width $1\frac{3}{4}$ to $2\frac{1}{4}$ times in length of head; a minute barbel; no tubercles on the snout. Dorsal III 10, slightly nearer occiput than root of caudal; last simple ray very strong, bony, not serrated, a little longer than head; border of fin strongly emarginate. Anal III 5, as long as or a little shorter than head. Pectoral as long as head. Ventral below anterior soft rays of dorsal. Caudal deeply forked. Caudal peduncle $1\frac{1}{2}$ times as long as deep. Scales 34–35 $\frac{5\frac{1}{2}}{6\frac{1}{2}}$, 3 between lateral line and ventral, 12 round caudal peduncle. Grey, back darker; fins grey.

Total length 140 millim.

Wase River, Ruanda, German East Africa, 1800 feet.—Types in Berlin Museum.

4*b*. VARICORHINUS LATIROSTRIS.

Bouleng. Ann. & Mag. N. H (8) vi. 1910, p. 548.

Depth of body 3 to $3\frac{1}{2}$ times in total length, length of head 4 to $4\frac{1}{2}$ times. Snout rounded, $1\frac{2}{3}$ to 2 times as broad as long, as long as or a little shorter than eye, which is 3 to $3\frac{1}{2}$ times in length of head and $1\frac{1}{2}$ to $1\frac{2}{3}$ times in interorbital width; mouth straight, its width $\frac{2}{5}$ to $\frac{1}{2}$ length of head; a minute barbel at angle of mouth; a few, very small, conical tubercles on sides of snout. Dorsal IV 10 (rarely 11), equally distant from end of snout or nostrils and from root of caudal; last simple ray very strong, bony, not serrated, straight or very feebly curved, as long as or slightly longer than head; border of fin strongly emarginate. Anal III 5, longest ray a little shorter than head. Pectoral as long as or a little shorter than head, not reaching ventral; latter inserted below anterior soft rays of dorsal. Caudal deeply forked. Caudal peduncle twice as long as deep. Scales 34–39 $\frac{5\frac{1}{2}-6\frac{1}{2}}{5\frac{1}{2}-6\frac{1}{2}}$, 3–$3\frac{1}{2}$ between lateral line and ventral, 14 (rarely 12) round caudal peduncle.

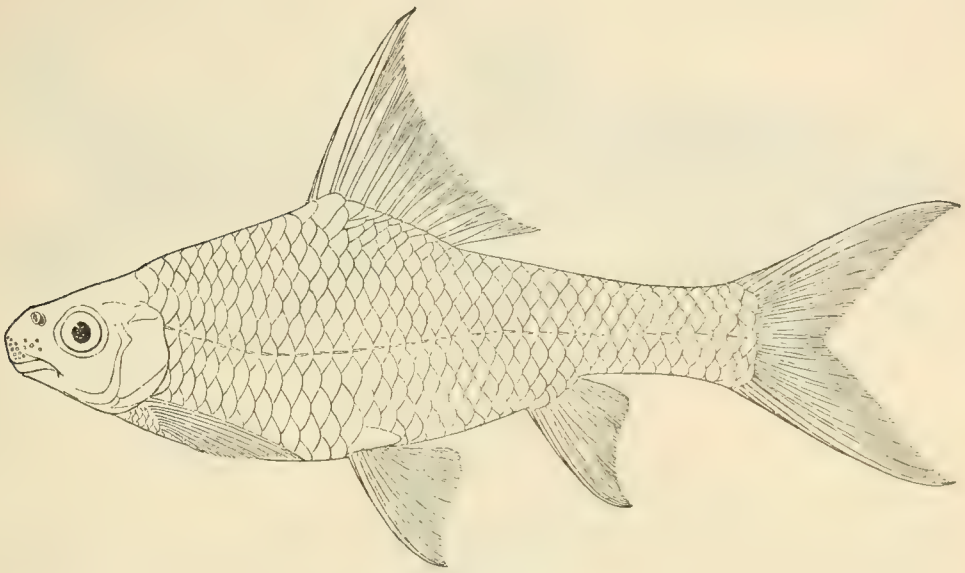
Olive-brown above, whitish beneath; fins dark grey, often tinged with red.

Total length 160 millim.

Angola.

1–5. Types. Lucalla R. at Lucalla. Dr. W. J. Ansorge (C.).

Fig. 139.



Varicorhinus latirostris.
Type. $\frac{2}{5}$.

4 *c*. VARICORHINUS NEELSPRUITENSIS.

Gilchrist & Thompson, Ann. & Mag. N. H. (8) viii. 1911, p. 478, and Ann. S. Afr. Mus. xi. 1913, p. 366, fig.

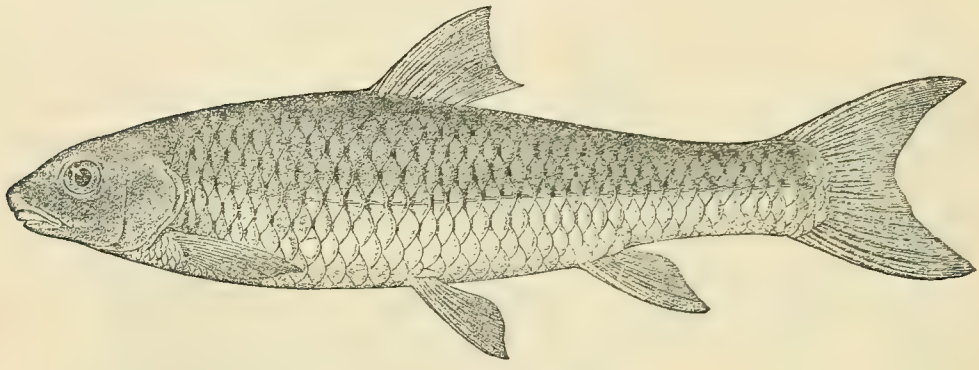
Body compressed, depth $3\frac{3}{5}$ to 4 times in total length; length of head $4\frac{1}{2}$ to $4\frac{3}{5}$ times; width of head $\frac{3}{5}$ to $\frac{2}{3}$ its length. Snout prominent, rounded, shorter than postocular portion of head; eye lateral, $4\frac{3}{5}$ to $4\frac{4}{5}$ times in length of head and about 2 to $2\frac{2}{5}$ times in interorbital width; width of mouth about $\frac{1}{2}$ length of head; no barbel; small tubercles on snout; mouth feebly curved. Dorsal III 8–9, upper edge slightly emarginate; no ossified ray; longest branched ray $\frac{4}{5}$ to about same length as head. Anal II 5, not reaching base of caudal. Pectoral $\frac{4}{5}$ to about same length as head, not reaching ventral, which is inserted below 2nd branched ray of dorsal. Caudal forked, lobes pointed.

Caudal peduncle $1\frac{4}{5}$ times to twice as long as deep. Scales 34–35 $\frac{5\frac{1}{2}-6}{6-6\frac{1}{2}}$, $2\frac{1}{2}$ between lateral line and ventral, 14 round caudal peduncle. Bluish black, darker above than below.

Total length 158 millim.

Neelspruit, Transvaal.—Types in S. African Museum, Cape Town.

Fig. 140.



Varicorhinus neelspruitensis.
Type (Ann. S. Afr. Mus.). $\frac{5}{6}$.

4 *d*. VARICORHINUS RUWENZORII.

Capoëta (*Pterocapoëta*) *ruwenzorii*, Pellegr. Bull. Soc. Zool. France, xxxiv. 1909, p. 156, and Mém. Soc. Zool. France, xxii. 1910, p. 284, pl. xiv. fig. 1.

Depth of body 4 to $4\frac{1}{3}$ times in total length, length of head $3\frac{3}{4}$ to 4 times. Snout rounded, $\frac{1}{3}$ length of head; eye 4 to $4\frac{1}{3}$ times in length of head, $1\frac{1}{2}$ times in interorbital width; mouth feebly curved, its width $\frac{1}{3}$ length of head; a minute barbel at angle of mouth. Dorsal III 10, a little nearer root of caudal than end of snout; last simple ray slender, flexible, nearly as long as head; border of fin slightly emarginate. Anal III 5, not reaching caudal. Pectoral $\frac{4}{5}$ length of head, not reaching ventral, which is inserted below anterior branched rays of dorsal. Caudal deeply forked. Caudal peduncle $1\frac{1}{2}$ to 2 times as long as deep. Scales 39–40 $\frac{6\frac{1}{2}-7\frac{1}{2}}{10}$, $3\frac{1}{2}$ between lateral line and root of ventral, 12 round caudal peduncle. Olive-brown, silvery on the sides; caudal greyish, other fins yellow.

Total length 94 millim.

Wimi R., Southern slope of Mt. Ruwenzori.—Types in Paris Museum.

VOL. II.

Fam. CYPRINIDÆ (*continued*).

4. **BARBUS**, Cuv.

3. BARBUS HOLUBI, Stdr.

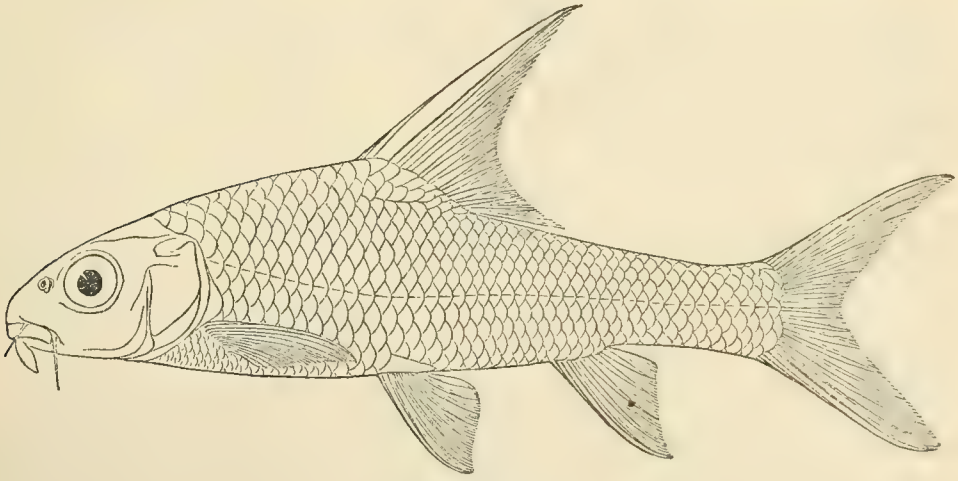
Gilchrist & Thompson, Ann. S. Afr. Mus. xi. 1913, p. 374.
Barbus lineolatus, Gilchr. & Thomps. t. c. p. 375, fig.
Barbus zuluensis, Gilchr. & Thomps. t. c. p. 376.

8*a*. BARBUS ENSIS.

Bouleng. Ann. & Mag. N. H. (8) vi. 1910, p. 549.

Depth of body $3\frac{1}{2}$ to $4\frac{1}{4}$ times in total length, length of head $3\frac{1}{3}$ to $3\frac{3}{4}$ times. Snout rounded, 3 times in length of head; eye $2\frac{3}{4}$ to $3\frac{1}{2}$

Fig. 141.



Barbus ensis.
Type. $\frac{5}{6}$.

times in length of head, interorbital width 3 to $3\frac{1}{4}$ times; mouth inferior, its width 4 times in length of head; lips moderately or rather strongly developed, lower continuous across chin, where it may form a rather long rounded lobe; two barbels on each side, anterior about $\frac{2}{3}$ length of eye, posterior as long as eye or slightly longer. Dorsal IV 9,

equally distant from centre or anterior border of eye and from root of caudal, border concave; last simple ray extremely strong, bony, not serrated, straight, $1\frac{1}{4}$ to $1\frac{2}{3}$ times length of head. Anal III 5, not reaching caudal. Pectoral shorter than head, not reaching ventral; base of latter below anterior rays of dorsal. Caudal peduncle twice as long as deep. Scales finely striated longitudinally, 36–40 $\frac{5\frac{1}{2}-7\frac{1}{2}}{5\frac{1}{2}}$ 3 between lateral line and ventral, 12–14 round caudal peduncle. Silvery, back brownish; fins sometimes tinged with red.

Total length 140 mm.

Angola.

1–8. Types.	Lucalla R. at Lucalla.	Dr. W. J. Ansorge (C.).

Most nearly allied to *B. bynni* and *B. ruspolii*. Distinguished from both by the proportions of the head and body, the larger eye, the more anterior position of the dorsal fin, and from the latter by the higher number of scales in the lateral line.

9. BARBUS ERLANGERI, Blgr.

Add:—

8–13. Ad., hgr., & yg.	Eusso Nyiro, below falls.	A. B. Percival, Esq. (P.).
14–15. Ad.	Eusso Nyiro, hot springs at Chandler falls.	,,
16–18. Yg.	Saya.	,,

11. BARBUS DUCHESNII, Blgr.

Lönnberg, Handl. Svensk. Vet. Akad. xlvii. no. 6, 1911, p. 38.

11*a*. BARBUS ROCADASI.

Bouleng. Ann. & Mag. N. H. (8) vi. 1910, p. 550.

Depth of body 3 to $3\frac{1}{2}$ times in total length, length of head $3\frac{1}{2}$ to 4 times. Snout rounded, $2\frac{3}{4}$ to $3\frac{1}{4}$ times in length of head; eye 3 (young) to 5 times in length of head, interorbital width $2\frac{3}{4}$ to 3 times; mouth inferior, its width 3 to $3\frac{2}{3}$ times in length of head; lips moderately developed, lower continuous across chin (sometimes interrupted in the young), but not forming a median lobe; two barbels on each side, anterior a little shorter than posterior, which is as long as or a little longer than eye. Dorsal III–IV 9 (rarely 8 or 10), equally distant from anterior or posterior border of eye and from caudal, border concave; last simple ray very strong, bony, not serrated, straight or feebly curved,

$\frac{3}{5}$ to once length of head. Anal III 5, not reaching caudal. Pectoral as long as or a little shorter than head, not reaching ventral; base of latter below anterior soft rays of dorsal. Caudal peduncle $1\frac{1}{3}$ to $1\frac{1}{2}$ times as long as deep. Scales finely striated longitudinally, 30–35 $\frac{4\frac{1}{2}-5\frac{1}{2}}{4\frac{1}{2}}$, $2\frac{1}{2}$–3 between lateral line and ventral, 12 round caudal peduncle. Olive-brown above, scales edged with darker, whitish beneath; fins dark in the adult, orange at the base, ventrals and anal edged with yellow or orange.

Total length 350 millim.

Angola.

1–5. Types.	Quanza R. at Cambambe.	Dr. W. J. Ansorge (C.).
6. Skel.	,, ,,	,,
7–8. Types.	Quanza R. at Dondo.	,,
9–10. Types.	Lucalla R. at Lucalla.	,,

Distinguished from *B. duchesnii* by shorter barbels.

11 *b*. BARBUS GULIELMI.

Boulenger, Ann. & Mag. N. H. (8) vi. 1910, p. 550.

Depth of body $3\frac{3}{4}$ to 4 times in total length, length of head $3\frac{2}{3}$ to 4 times. Snout obtusely pointed, 3 times in length of head; eye $3\frac{1}{3}$ times in length of head, interorbital width 3 to $3\frac{1}{3}$ times; mouth inferior, its width 4 to $4\frac{1}{3}$ times in length of head; lips feebly developed, lower continuous across chin; two barbels on each side, anterior a little shorter than posterior, which measures 1 to $1\frac{2}{5}$ diameters of eye. Dorsal III 8–9, equally distant from anterior border or centre of eye and from caudal, border concave; last simple ray very strong, bony, not serrated, as long as or a little shorter than head. Anal III 5, not reaching caudal. Pectoral a little shorter than head, not reaching ventral; base of latter below anterior soft rays of dorsal. Caudal peduncle $1\frac{2}{3}$ to 2 times as long as deep. Scales finely striated longitudinally, 29–31 $\frac{4\frac{1}{2}}{4\frac{1}{2}}$, 2–$2\frac{1}{2}$ between lateral line and ventral, 12 round caudal peduncle. Brownish above, silvery white beneath, the scales on the upper parts blackish at the base; fins greyish.

Total length 150 millim.

Angola.

1–2. Types.	Quanza R. at Dondo.	Dr. W. J. Ansorge (C.).

Distinguished from the preceding by the more slender body, the longer caudal peduncle, the more pointed snout, and the narrower mouth.

13*a*. BARBUS KIVUENSIS.

Pappenh. in Schubotz, Wiss. Ergebn. Deutsch. Z.-Afr. Exped., Zool. iii. p. 237, pl. ii. fig. 1 (1914).

Depth of body $3\frac{1}{2}$ times in total length, length of head $4\frac{1}{8}$ times. Snout conical, $3\frac{1}{3}$ times in length of head; eye $4\frac{1}{2}$ times in length of head, interorbital width $3\frac{1}{3}$ times; mouth inferior, its width $4\frac{1}{2}$ times in length of head; lips well developed, lower uninterrupted, with a rounded median lobe; two barbels on each side, anterior $\frac{3}{4}$ length of eye, posterior as long as eye. Dorsal IV 8, equally distant from posterior border of eye and from caudal, border feebly concave; last simple ray strong, bony, not serrated, $\frac{5}{7}$ length of head. Anal III 5, not reaching caudal. Pectoral $\frac{4}{5}$ length of head, not reaching ventral; latter below anterior rays of dorsal. Caudal peduncle nearly twice as long as deep. Scales with wavy longitudinal striæ, 35 $\frac{5\frac{1}{2}}{5\frac{1}{2}}$, $2\frac{1}{2}$ between lateral line and ventral, 12 round caudal peduncle. Dark grey above, each scale darker at the base, yellowish beneath.

Total length 200 millim.

Lake Kivu.—Type in Berlin Museum.

Distinguished from *B. lobogenys* by the number of scales between lateral line and ventral.

14. BARBUS RADCLIFFII, Blgr.

Add:—

15. Ad.	Ripon Falls.	Dr. van Someren (P.).

15*a*. BARBUS KIMBERLEYENSIS.

Gilchrist & Thompson, Ann. S. Afr. Mus. xi. 1913, p. 378, fig.

Depth of body $4\frac{1}{7}$ times in total length, length of head $3\frac{1}{2}$ times. Snout 3 times in length of head and $1\frac{2}{3}$ times in postocular portion of head; eye $6\frac{1}{2}$ times in length of head, interorbital width 4 times; mouth terminal, its width $2\frac{3}{5}$ times in length of head; lips thick; two barbels on each side, subequal and a little longer than diameter of eye. Dorsal IV 9; its distance from occiput equals $1\frac{1}{5}$ times its distance from root of caudal, border nearly straight; last simple ray strong, bony, not serrated, nearly straight, its rigid part a little more than $\frac{1}{2}$ length of head. Anal III 5; scarcely reaching to caudal. Pectoral nearly $\frac{2}{3}$ length of head, not reaching to ventral; base of latter partly in front of

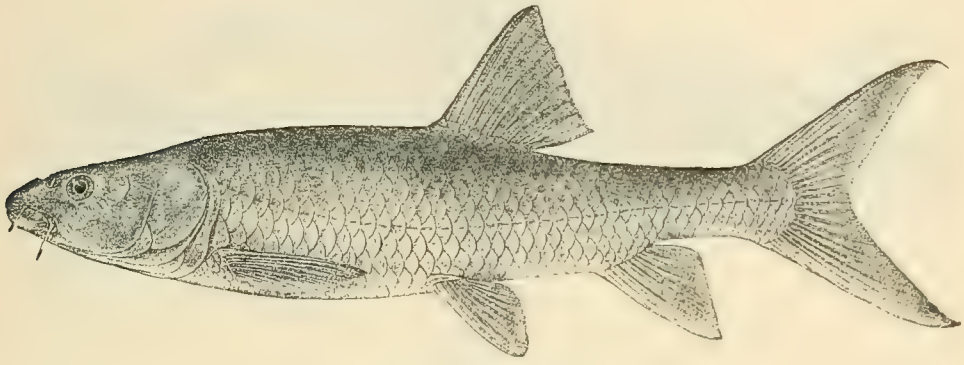
dorsal. Caudal peduncle nearly twice as long as deep. Scales longitudinally striated, 40 $\frac{7}{6}$, 3 between lateral line and ventral, 16 round caudal peduncle. Greyish brown above, light yellow below.

Total length 345 millim.

Kimberley Reservoir, Cape Colony.—Type in S. African Museum, Cape Town.

Apparently allied to *B. marequensis*, but ventrals more posterior in position and scales smaller.

Fig. 142.



Barbus kimberleyensis.
Type (Ann. S. Afr. Mus.). $\frac{1}{3}$.

15 *b*. BARBUS MENTALIS.

Gilchrist & Thompson, t. c. p. 384, fig.

Depth of body nearly 4 times in total length, length of head $3\frac{3}{4}$ times. Snout rounded, about $\frac{1}{3}$ length of head; eye $5\frac{3}{5}$ times in length of head, interorbital width nearly 3 times; mouth terminal, width $3\frac{1}{10}$ times in length of head; lips very thick, lower extending across chin, both lips produced into median lobes, that on upper triangular and low and the one on lower rounded and about $\frac{3}{4}$ diameter of eye; two barbels on each side, posterior a little longer than anterior and nearly $1\frac{1}{2}$ times diameter of eye. Dorsal IV 8, a little nearer to occiput than to root of caudal, border almost straight; last simple ray moderately enlarged, bony, slightly curved, segmented down to its lower third, smooth, nearly $\frac{2}{3}$ length of head. Anal III 5, reaching caudal. Pectoral nearly as long as head, not reaching ventral; base of latter nearly wholly in advance of dorsal. Caudal peduncle $1\frac{4}{5}$ times as long as deep. Scales longitudinally striated, 38 $\frac{6\frac{1}{2}}{7\frac{1}{2}}$, 3 between lateral line and ventral,

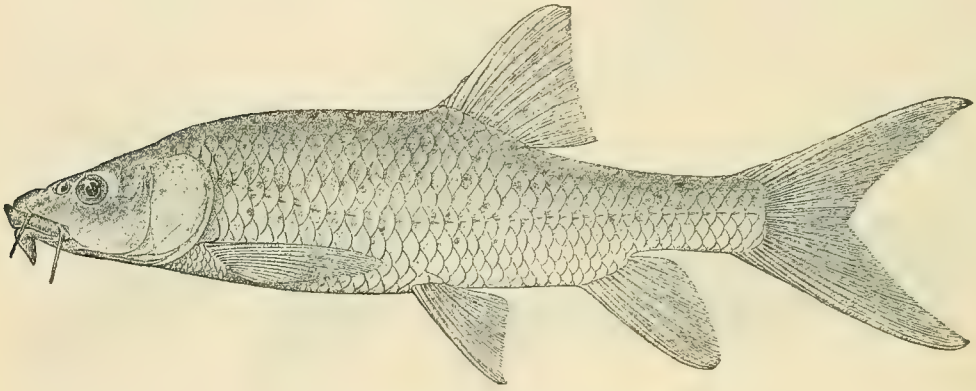
14 round caudal peduncle. Brownish on back, flesh-coloured on sides and belly; many of the scales on upper part of the body with a dark patch on base.

Total length 262 millim.

Kimberley Reservoir.—Type in S. African Museum, Cape Town.

Apparently allied to the preceding.

Fig. 143.



Barbus mentalis.
Type (Ann. S. Afr. Mus.). $\frac{1}{2}$.

15 *c*. BARBUS MFONGOSI.

Gilchrist & Thompson, t. c. p. 382, fig.

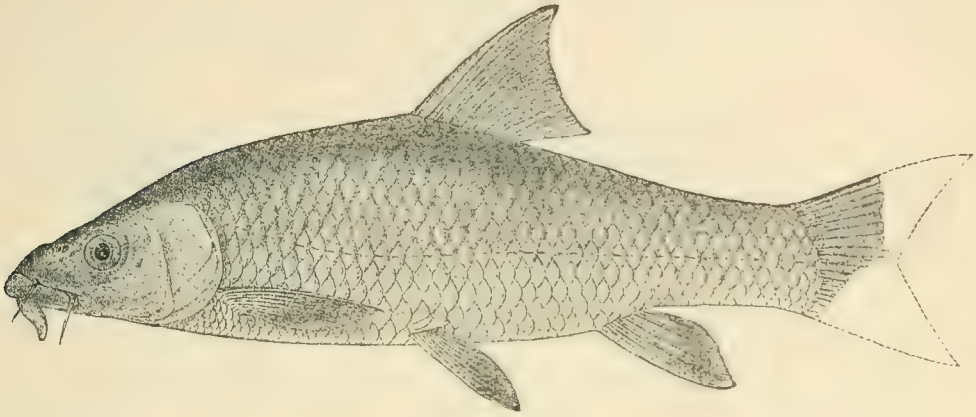
Depth of body $3\frac{3}{5}$ times in total length, length of head $3\frac{7}{10}$ times. Snout rounded, projecting considerably beyond mouth, $2\frac{1}{2}$ times in length of head; eye $5\frac{3}{5}$ times in length of head, interorbital width 3 times; mouth inferior, its width $3\frac{1}{2}$ times in length of head; lips strongly developed, lower continuous across chin and produced into a rounded mental lobe as long as the eye; two barbels on each side, anterior $\frac{9}{10}$ diameter of eye, posterior $1\frac{1}{5}$ times. Dorsal IV 8, equally distant from eye and root of caudal, border concave; last simple ray very strong, bony, not serrated, straight, the rigid portion a little more than $\frac{3}{5}$ length of head. Anal III 5, not reaching caudal. Pectoral $\frac{7}{10}$ of head, not reaching ventral; the base of latter falling just behind first ray of dorsal. Caudal peduncle $1\frac{1}{3}$ times as long as deep. Scales longitudinally striated, 38 $\frac{7\frac{1}{2}}{6\frac{1}{2}}$, $3\frac{1}{2}$ between lateral line and ventral, 16 round caudal peduncle. Silvery, darker above than below; fins darkish.

Total length 206 millim.

M'Fongosi, Zululand.—Type in S. African Museum, Cape Town.

Apparently allied to *B. marequensis*, but last simple ray of dorsal stronger and scales smaller.

Fig. 144.



Barbus mfongosi.
Type (Ann. S. Afr. Mus.). $\frac{1}{2}$.

18. BARBUS OREAS, Blgr.

Pietschmann, Jahrb. Nass. Ver. Nat. lxvi. 1913, p. 189.

20 *a*. BARBUS SOMERENI.

Bouleng. Ann. & Mag. N. H. (8) viii. 1911, p. 369.

Depth of body $3\frac{2}{3}$ times in total length, length of head $4\frac{1}{4}$ times. Snout rounded, 3 times in length of head; eye 5 times in length of head, interorbital width $2\frac{2}{3}$ times; mouth subinferior, its width $2\frac{2}{3}$ times in length of head; lips moderately developed, lower continuous across the chin; two barbels on each side, anterior $1\frac{1}{4}$, posterior $1\frac{1}{2}$ diameters of eye. Dorsal III 10, equally distant from occiput and from root of caudal, border straight; last simple ray strong, bony, not serrated, shorter than head. Anal III 5, not reaching caudal. Pectoral $\frac{4}{5}$ length of head, not reaching ventral; latter below anterior rays of dorsal. Caudal peduncle $1\frac{2}{3}$ times as long as deep. Scales longitudinally striated, 33 $\frac{5\frac{1}{2}}{5\frac{1}{2}}$, 3 between lateral line and ventral, 12 round caudal peduncle. Brownish above, whitish below.

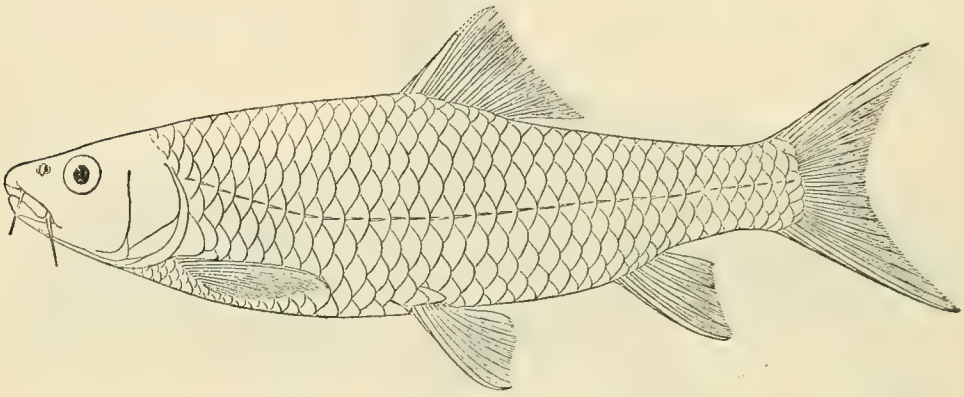
Total length 205 millim.

Ruwenzori (Nile System), Uganda.

1. Type. Sebwe R., Mt. Ruwenzori, 6000 ft. Dr. van Someren (P.).

Distinguished from its nearest allies by the number (10) of branched rays in the dorsal fin.

Fig. 145.



Barbus somereni.
Type. $\frac{5}{8}$.

25. BARBUS GREGORII, Blgr.

Add:—

23–27. Ad. & yg.	Malawa R. (Nile System), Kavirondo, 4000 ft.	Sir F. J. Jackson (P.).
28–29. Ad. & yg.	R. Molo, L. Baringo.	,,

33 *a*. BARBUS RUASÆ.

Pappenh. in Schubotz, Wiss. Ergebn. Deutsch. Z.-Afr. Exped., Zool. iii. p. 238, pl. ii. fig. 2 (1914).

Depth of body equal to length of head, $3\frac{4}{5}$ to 4 times in total length. Snout obtuse, $3\frac{1}{5}$ to $3\frac{1}{3}$ times in length of head; eye $3\frac{1}{2}$ times in length of head, interorbital width $3\frac{1}{5}$ to $3\frac{1}{3}$ times; mouth terminal; lips well developed, lower continuous across the chin but hardly forming a lobe; two barbels on each side, anterior slightly shorter than posterior, which is $\frac{4}{5}$ diameter of eye. Dorsal III 8, equally distant from occiput and from caudal, border feebly concave; last simple ray strong, bony, not serrated, $\frac{3}{4}$ length of head. Anal III 5, not reaching caudal. Pectoral a little shorter than head, not reaching ventral; latter below anterior rays of dorsal. Caudal peduncle $1\frac{4}{5}$ times as long as deep. Scales

longitudinally striated, 27 $\frac{4\frac{1}{2}}{4\frac{1}{2}}$, 2 between lateral line and ventral, 12 round caudal peduncle. Silvery, brownish on the back, each scale with a dark base; fins grey.

Total length 145 millim.

Mkunga, near Ruasa, N.W. Ruanda.—Types in Berlin Museum.

Distinguished from *B. linnelli* by shorter barbels, narrower interorbital space, and longer caudal peduncle.

34. BARBUS KRAPFI, Blgr.

Lönnberg, Handl. Svensk. Vet. Ak. xlvii. 6, 1911, p. 38.

34 *a*. BARBUS AHLSELLI.

Lönnberg, t. c. p. 39, fig.

Depth of body $3\frac{3}{5}$ to $3\frac{4}{5}$ times in total length, length of head about $3\frac{1}{4}$ times. Snout 3 to $3\frac{1}{4}$ times in length of head; eye about 4 times in length of head, equal to interorbital width; lips well developed, lower continuous across the chin; posterior barbel about $1\frac{1}{3}$ diameter of eye, anterior about as long as eye (shorter in young). Dorsal III 8–9, equally distant from occiput and from root of caudal, border concave; last simple ray strong, bony, not serrated, a little shorter than head. Anal III 5, nearly reaching caudal. Pectoral shorter than head, not reaching ventral; latter below anterior branched rays of dorsal. Caudal peduncle not quite $1\frac{1}{2}$ times as long as deep. Scales longitudinally striated, 25–26 $\frac{4\frac{1}{2}}{4\frac{1}{2}}$, 2 between lateral line and ventral, 12 round caudal peduncle.

Total length 110 millim.

Luazomela River, tributary of Guaso Nyiro, British East Africa.—Type in Stockholm Museum.

Appears to differ from *B. krapfi* by the much longer head, the lesser depth of the body, and the longer dorsal spine.

34 *b*. BARBUS MAWAMBIENSIS.

Barbus lindii, var. *mawambiensis*, Steind. Anz. Ak. Wien, 1911, p. 533.

Barbus mawambiensis, Steind. Denkschr. Ak. Wien, lxxxi. 1913, p. 25, pl. iii. fig. 3 *.

Depth of body $2\frac{4}{5}$ to $3\frac{2}{5}$ times in total length, length of head 3 to 4

* The numbering of figs. 1 and 3 has been inverted on pl. iii.

times. Snout rounded, $2\frac{2}{3}$ to $3\frac{1}{3}$ times in length of head; eye 4 to 5 times in length of head, interorbital width 3 to $3\frac{1}{2}$ times; mouth subinferior, its width $3\frac{1}{2}$ to 4 times in length of head; lower lip continuous across chin; two barbels on each side, posterior a little longer than anterior and as long as or a little longer than eye. Dorsal III 9, originating at nearly equal distance from end of snout and from caudal, border feebly concave; last simple ray strong, bony, not serrated, a little shorter than head. Anal III 5. Pectoral $1\frac{1}{4}$ to $1\frac{1}{3}$ times length of head, reaching or nearly reaching ventral; latter below anterior rays of dorsal. Caudal peduncle as long as or slightly longer than deep. Scales longitudinally striated, 21–24 $\frac{4\frac{1}{2}}{4\frac{1}{2}}$, 2–$2\frac{1}{2}$ between lateral line and ventral, 12 round caudal peduncle. Silvery grey above, white beneath; fins pale grey.

Total length 150 millim.

Congo (Ituri and Ja Rivers).—Types in Vienna Museum.

Remarkable for the low number of scales in the lateral line.

34 *c*. BARBUS CARDOZOI.

Boulenger, Ann. Mus. Congo, Zool. ii. 3, p. 12, pl. xx. (1912).

Depth of body $2\frac{4}{5}$ to $3\frac{1}{2}$ times in total length, length of head $3\frac{4}{5}$ to $4\frac{1}{2}$ times. Head $1\frac{1}{2}$ to $1\frac{2}{3}$ times as long as broad; snout rounded, projecting considerably beyond mouth, about 3 to $3\frac{1}{2}$ times in length of head; eye 3 (young) to $5\frac{1}{2}$ times in length of head, interorbital width $2\frac{1}{3}$ to $2\frac{3}{4}$ times; width of mouth 3 to $3\frac{1}{2}$ times in length of head; lips rather strongly developed, lower continuous across the chin, where it forms a rounded lobe; two barbels on each side, anterior usually a little shorter than posterior, which is as long as eye in young, $1\frac{1}{3}$ to $1\frac{1}{2}$ times in adult; numerous very small nuptial tubercles on side of head in adult. Dorsal III 9, equally distant from eye or occiput and from caudal, border very concave; last simple ray strong, bony, not serrated, its rigid part $\frac{3}{5}$ to $\frac{3}{4}$ length of head, Anal III 5, usually not reaching caudal. Pectoral a little shorter than head, not reaching, or nearly reaching ventral; latter below anterior rays of dorsal. Caudal peduncle $1\frac{1}{3}$ to $1\frac{1}{2}$ times as long as deep. Scales finely striated longitudinally, 24–28 $\frac{4\frac{1}{2}}{4\frac{1}{2}}$, 2–$2\frac{1}{2}$ between lateral line and ventral, 12 round caudal peduncle. Olive-brown above, whitish beneath; scales on upper half of body with a dark basal spot; fins greyish brown, dorsal and anal sometimes tinged with red at the base.

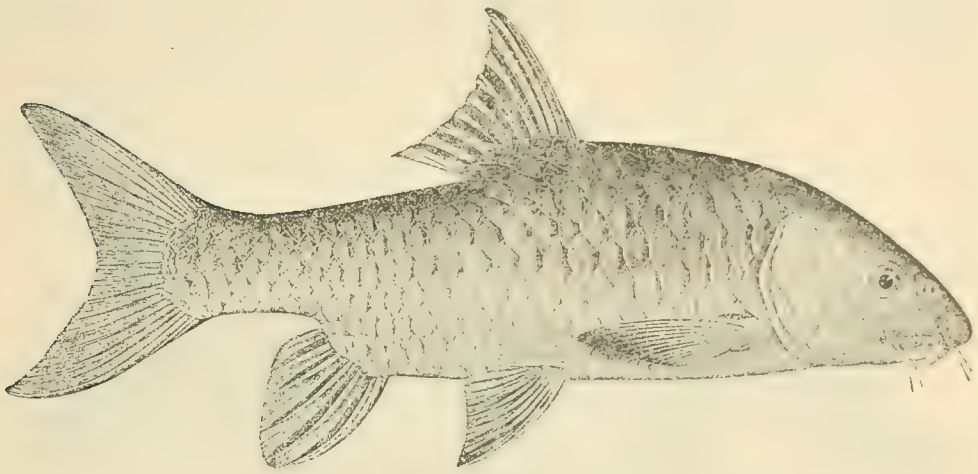
Total length 530 millim.

Chiloango System and Ja River (Congo System).

1. Type.	Loango R. at N'Kutu.	Dr. W. J. Ansorge (C.).
2–5. Types.	Luali R. at Buco Zau.	,,
6–10. Types.	Lebuzi R. at Boma Vonde.	,,
11. Ad.	Ja R., S. Cameroon.	G. L. Bates, Esq. (C.).

Distinguished from *B. krapfi* by the more prominent snout and the broader interorbital region.

Fig. 146.



Barbus cardozoi.
Type (A. M. C.). ¼.

34 *d*. BARBUS ROYLII.

Boulenq. t. c. p. 13, pl. xxi.

Depth of body nearly equal to length of head, $3\frac{2}{3}$ to 4 times in total length. Head twice as long as broad; snout subacuminate, projecting strongly beyond mouth, $2\frac{1}{2}$ to $2\frac{2}{3}$ times in length of head, ending in a rounded lobe which folds over the upper lip; eye 4 (young) to $6\frac{1}{2}$ times in length of head; lips extremely developed, lower forming on the chin a large rounded lobe; two barbels on each side, anterior 1 (young) to $1\frac{1}{3}$ diameters of eye, posterior $1\frac{1}{3}$ to 2 times. Dorsal III 9, equally distant from anterior or posterior border of eye and from caudal, border very concave; last simple ray strong, bony, not serrated, $\frac{1}{2}$ to $\frac{2}{3}$ length of head. Anal III 5, usually reaching caudal. Pectoral $\frac{3}{4}$ to $\frac{5}{6}$ length of head, not reaching ventral, which is inserted below anterior branched rays of dorsal. Caudal peduncle $1\frac{3}{4}$ to 2 times as long as deep. Scales

finely striated longitudinally, 28–32 $\frac{4\frac{1}{2}}{4\frac{1}{2}}$, 2–$2\frac{1}{2}$ between lateral line and ventral, 12 round caudal peduncle. Olive-brown above, whitish beneath; scales on upper half of body with a dark basal spot; fins greyish brown.

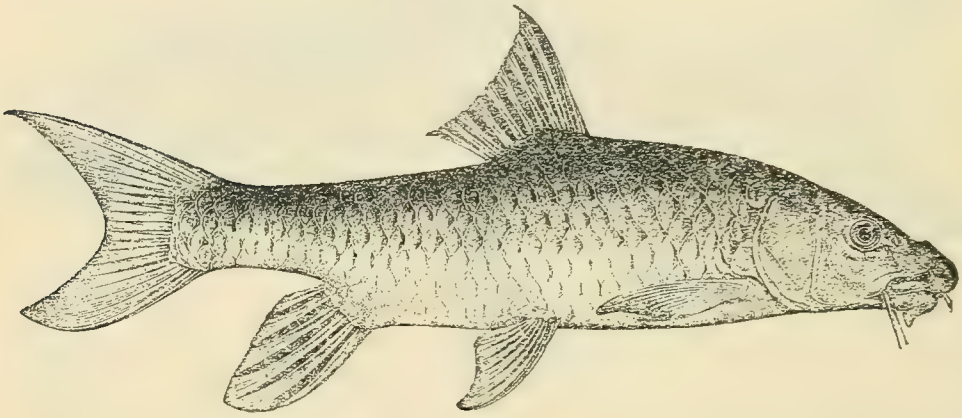
Total length 550 millim.

Chiloango System.

1–3. Types.	Loango R. at N'Kutu.	Dr. W. J. Ansorge (C.).
4–5. Types.	Luali R. at Buco Zau.	,,

Distinguished from the preceding by the narrower head, the more developed lips, the longer caudal peduncle, and the greater number of scales in the lateral line.

Fig. 147.



Barbus roylii.
Type (A. M. C.). $\frac{1}{4}$.

37. BARBUS HINDII, Blgr.

Vinciguerra, Ann. Mus. Genova, (3) v. 1913, p. 301; Pappenheim in Schubotz, Wiss. Ergebn. Deutsch. Z.-Afr. Exped., Zool. iii. p. 239 (1914).

40 *a*. BARBUS BAYONI.

Boulenger, Ann. Mus. Genova, (3) v. 1911, p. 77.

Depth of body $3\frac{1}{3}$ to $3\frac{1}{2}$ times in total length, length of head $3\frac{1}{2}$ to 4 times. Snout rounded, projecting beyond mouth, 3 to $3\frac{1}{2}$ times in length of head; eye $3\frac{2}{3}$ (young) to 7 times in length of head, interorbital width $2\frac{1}{2}$ to $2\frac{4}{5}$ times; width of mouth 3 to $3\frac{1}{2}$ times in length of head, lips well developed, broadly interrupted on the chin; barbels

two on each side, anterior $\frac{2}{3}$ to $\frac{4}{5}$ diameter of eye, posterior nearly as long as eye, the distance between them greater than diameter of eye in the adult. Dorsal III–IV 9, free edge distinctly emarginate; last simple ray strong, bony, not serrated, $\frac{1}{2}$ to $\frac{2}{3}$ length of head; the fin nearly equally distant from occiput and from root of caudal. Anal II–III 5, longest ray about $\frac{2}{3}$ length of head. Pectoral $\frac{2}{3}$ to $\frac{3}{4}$ length of head, not reaching ventral. Ventral below anterior rays of dorsal. Caudal peduncle $1\frac{1}{2}$ to $1\frac{3}{4}$ times as long as deep. Scales finely striated longitudinally, 32–34 $\frac{6\frac{1}{2}}{5\frac{1}{2}}$, 3 between lateral line and ventral, 12 round caudal peduncle. Olive-brown above and on the fins, whitish beneath; scales of young edged with blackish.

Total length 640 millim.

Victoria Nile.—Types in Genoa Museum.

1. One of the types.	Kakinda.	Dr. E. Bayon (C.); Genoa Museum (P.).
2. Ad.	Jinja, Ripon Falls.	Dr. van Someren (P.).

Distinguished from *B. intermedius* by the broader mouth.

40 *b*. BARBUS GIRARDI.

Bouleng. Ann. & Mag. N. H. (6) vi. 1910, p. 551.

Depth of body 3 to $3\frac{1}{2}$ times in total length, length of head $3\frac{1}{2}$ to $4\frac{1}{3}$ times. Snout rounded, $3\frac{1}{3}$ to $3\frac{1}{2}$ times in length of head; eye 3 (young) to 4 times in length of head, interorbital width $2\frac{1}{2}$ to $2\frac{2}{3}$ times; mouth inferior, its width $3\frac{1}{2}$ to 4 times in length of head; lips rather feebly developed, lower restricted to the sides; two barbels on each side, subequal, or posterior a little longer, $1\frac{1}{3}$ to $1\frac{1}{2}$ diameters of eye. Dorsal IV 10, equally distant from anterior border of eye and from caudal, border concave; last simple ray very strong, bony, not serrated, 1 to $1\frac{1}{2}$ times length of head. Anal III 5, reaching caudal in the adult. Pectoral as long as head, nearly reaching ventral; latter below anterior soft rays of dorsal. Caudal peduncle $1\frac{2}{3}$ times as long as deep. Scales finely striated longitudinally, 40–44 $\frac{7\frac{1}{2}-8\frac{1}{2}}{6\frac{1}{2}-7\frac{1}{2}}$, $3\frac{1}{2}$–$4\frac{1}{2}$ between lateral line and ventral, 16–18 round caudal peduncle. Brownish above, the scales darker at the base, whitish beneath; all the fins of a rich red in life.

Total length 300 millim.

Angola.

1–6. Types.	Lucalla R. at Lucalla.	Dr. W. J. Ansorge (C.).

Distinguished from *B. intermedius* by the smaller scales.

42. BARBUS JARSINUS, Blgr.

Lönnberg, Handl. Svensk. Vet. Ak. xlvii. 6, 1911, p. 40.

45. BARBUS EURYSTOMUS, Keilh.

Barbus intermedius, vars. *eurystomus*, *latirostris*, *brevicauda*, Keilhack, Mitth. Zool. Mus. Berl. v. 1910, p. 103, pls. i. fig. 7, & ii. fig. 6.

52 *a*. BARBUS MIRABILIS.

Pappenh. in Schubotz, Wiss. Ergebn. Deutsch. Z.-Afr. Exped., Zool. iii. p. 239, pl. iii. fig. 1 (1914).

Depth of body $3\frac{1}{4}$ times in total length, length of head over $3\frac{4}{5}$ times. Snout obtusely pointed, $3\frac{1}{5}$ times in length of head; eye $5\frac{1}{5}$ times in length of head, interorbital width over $2\frac{2}{5}$ times; mouth subinferior, its width nearly $3\frac{3}{5}$ times in length of head; lower jaw with an obtuse keel covered with a thin horny layer; lips feebly developed, interrupted on the chin; two barbels on each side, anterior nearly as long as eye, posterior $1\frac{1}{5}$. Dorsal IV 10, a little nearer root of caudal than occiput, border straight; last simple ray strong, bony, not serrated, its stiff part $\frac{2}{5}$ length of head. Anal III 5, nearly reaching caudal. Pectoral $\frac{3}{4}$ length of head, not reaching ventral; latter below anterior half of dorsal. Caudal peduncle $1\frac{1}{3}$ times as long as deep. Scales 31 $\frac{5\frac{1}{2}}{5\frac{1}{2}}$, 3 between lateral line and ventral, 12 round caudal peduncle. Brownish grey, with silvery sheen, back darker, each scale with darker basis and lighter edge.

Total length 360 millim.

Ituri River, Congo.—Type in Berlin Museum.

Intermediate between *B. bingeri* and *B. bottegi*.

54. BARBUS PERPLEXICANS, Blgr.

Capoëta perplexicans, Pellegr. Mém. Soc. Zool. France, xxii. 1909, p. 286.

62. BARBUS NYASSÆ, Keilh.

Keilhack, Mitth. Zool. Mus. Berl. v. 1910, p. 99, pls. i. fig. 5 & ii. fig. 4.

65 *a*. BARBUS GRUVELI.

Pellegr. Bull. Soc. Zool. France, xxxvi. 1911, p. 184.

Depth of body 3 times in total length, length of head 4 times. Snout rounded, twice as long as eye, which is 5 times in length of head; mouth subinferior; lips feebly developed, lower restricted to the sides; mandible with a sub-trenchant edge; two pairs of barbels, anterior $\frac{3}{4}$ diameter of eye, posterior a little longer than eye. Dorsal III 9, equally distant from occiput and from root of caudal; last simple ray strong, bony, not serrated, its rigid part about $\frac{3}{5}$ length of head. Anal III 5, reaching caudal. Pectoral $\frac{4}{5}$ length of head, not reaching ventral; latter below anterior soft rays of dorsal. Caudal peduncle nearly as long as deep. Scales longitudinally striated, 24 $\frac{3\frac{1}{2}}{4\frac{1}{2}}$, 2 between lateral line and ventral, 12 round caudal peduncle. Olive, dorsal scales darker at the base.

Total length 280 millim.

Dubuka R., French Guinea.—Type in the Paris Museum.

Allied to *B. micronema*, but barbels longer and scales fewer.

66 *a*. BARBUS DWAARSENSIS.

Gilchrist & Thompson, Ann. S. Afr. Mus. xi. 1913, p. 384.

Depth of body equal to length of head, $3\frac{2}{3}$ times in total length. Snout pointed, projecting beyond mouth, nearly 3 times in length of head; eye $4\frac{5}{6}$ times in length of head, interorbital width nearly 3 times; mouth subinferior, its width $3\frac{1}{4}$ times in length of head; lips moderately developed, lower with a mental lobe about $\frac{1}{2}$ diameter of eye in depth; two barbels on each side, anterior $\frac{2}{3}$ diameter of eye, posterior as long as eye. Dorsal III 10, equally distant from middle of eye and from root of caudal, border concave; last simple ray moderately enlarged, bony, not serrated, its rigid part $\frac{2}{3}$ length of head. Anal III 5, not reaching caudal. Pectoral $\frac{4}{5}$ length of head, not reaching ventral; base of latter below middle of dorsal. Caudal peduncle $1\frac{1}{3}$ times as long as deep. Scales longitudinally striated (some on the upper part of the body appear to be slightly radiate), 27 $\frac{4\frac{1}{2}}{4\frac{1}{2}}$, $2\frac{1}{2}$ between lateral line and ventral, 12 round caudal peduncle. Brown, darker above than below, with about 3 faint darker longitudinal lines; lower part of head and opercles light.

Total length 106 millim.

Dwaars R., Transvaal.—Type in S. African Museum, Cape Town.

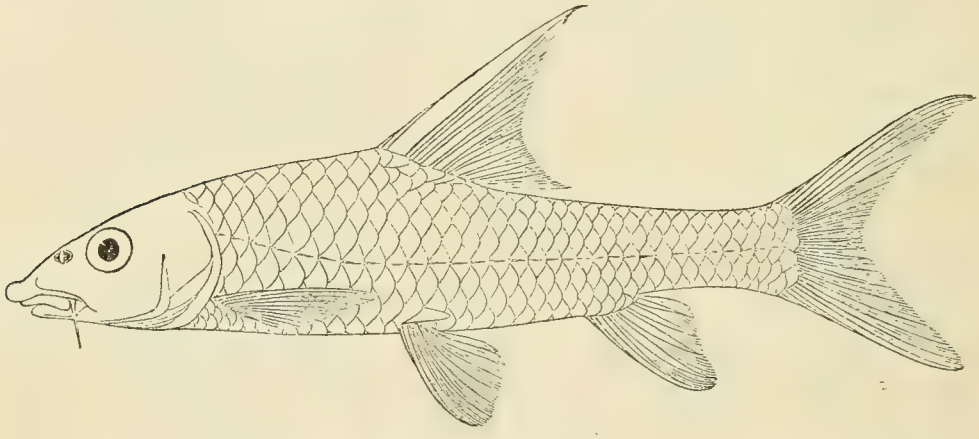
Near *B. brucii*, but caudal peduncle shorter.

66 *b*. BARBUS RHINOPHORUS.

Bouleng. Ann. & Mag. N. H. (8) vi. 1910, p. 552.

Depth of body 4 to $4\frac{1}{3}$ times in total length, length of head $3\frac{1}{2}$ to $3\frac{2}{3}$ times. Snout pointed, terminating in a rounded dermal pad projecting strongly beyond the mouth, its length $2\frac{1}{2}$ times in length of head; eye 4 to $4\frac{1}{3}$ times in length of head, interorbital width $3\frac{2}{3}$ to 4 times; mouth inferior, its width 4 to $4\frac{1}{3}$ times in length of head; lips rather strongly developed, not extending across chin; a single barbel on each side, as long as or slightly longer than eye; sides of snout with scattered, very small, granular nuptial tubercles. Dorsal III 9, equally distant from

Fig. 148.



Barbus rhinophorus.
Type. $\frac{5}{7}$.

nostrils or anterior border of eye and from caudal; last simple ray very strong, bony, not serrated, slightly longer than head. Anal III 5, not reaching caudal. Pectoral $\frac{3}{4}$ length of head, not reaching ventral; latter below middle of dorsal. Caudal peduncle twice as long as deep. Scales finely striated longitudinally, 30–32 $\frac{4\frac{1}{2}}{4\frac{1}{2}}$, 2 between lateral line and ventral, 12 round caudal peduncle. Brownish above, each scale blackish at the base, whitish beneath; fins red.

Total length 150 millim.

Angola.

1–2. Types. Lucalla R. at Lucalla. Dr. W. J. Ansorge (C.).

66 *c*. BARBUS ROSÆ.

Bouleng. Ann. & Mag. N. H. (8) vi. 1910, p. 552.

Depth of body $3\frac{1}{3}$ to $3\frac{2}{3}$ times in total length, length of head $3\frac{1}{2}$ to 4 times. Snout rounded, 3 to $3\frac{1}{3}$ times in length of head; eye 3 to $3\frac{1}{2}$ times in length of head, equal to interorbital width; mouth inferior, lower jaw with sharp cutting-edge; lips feebly developed, lower restricted to the sides; a single barbel on each side, $\frac{3}{5}$ to $\frac{2}{3}$ diameter of eye. Dorsal III 9, equally distinct from anterior border or centre of eye and from caudal, border concave; last simple ray very strong, bony, not serrated, as long as or a little longer than head. Anal III 5, not reaching caudal. Pectoral a little shorter than head, not reaching ventral; latter below middle of dorsal. Caudal peduncle nearly twice as long as deep. Scales finely striated longitudinally, 30–33 $\frac{4\frac{1}{2}-5\frac{1}{2}}{4\frac{1}{2}}$, $2\frac{1}{2}$ between lateral line and ventral, 12 round caudal peduncle. Olive above, yellowish beneath; a blackish lateral band, terminating in a large black spot at the base of the caudal; fins orange.

Total length 95 millim.

Angola.

1–3. Types. Lucalla R. at Lucalla. Dr. W. J. Ansorge (C.).

66 *d*. BARBUS HABERERI.

Steind. Anz. Ak. Wien, 1912, p. 444, and Denkschr. Ak. Wien, lxxxix. 1913, p. 24, pl. iii. fig. 1 *.

Depth of body $2\frac{3}{5}$ times in total length, length of head a little over 3 times. Snout rounded, $2\frac{3}{4}$ times in length of head; eye nearly 4 times in length of head, interorbital width $3\frac{3}{4}$ times; mouth subinferior; lower lip continuous across the chin; a single barbel on each side, as long as eye. Dorsal III 9, equally distant from occiput and from caudal, border concave; last simple ray very strong, bony, not serrated, as long as head. Anal III 5. Pectoral a little longer than head, nearly reaching ventral; latter below anterior rays of dorsal. Caudal peduncle a little longer than deep. Scales longitudinally striated, 26 $\frac{4\frac{1}{2}}{4\frac{1}{2}}$, $2\frac{1}{2}$ between lateral line and ventral, 12 round caudal peduncle. Silvery.

Total length 140 millim.

* The numbering of figs. 1 and 3 has been inverted on pl. iii.

Ja River (Congo System), South Cameroon.—Type in Vienna Museum.

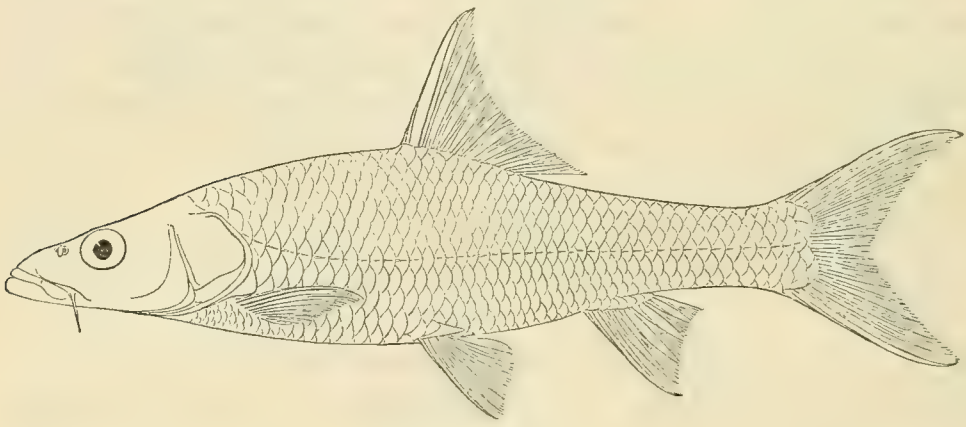
This and the two preceding species are distinguished from the other allies of *B. lynni* by the absence of the anterior barbel.

66 *e*. BARBUS LUCIUS.

Bouleng. Ann. & Mag. N. H. (8) vi. 1910, p. 553.

Depth of body $4\frac{1}{3}$ to $4\frac{1}{2}$ times in total length, length of head $3\frac{1}{4}$ to $3\frac{1}{3}$ times. Head nearly 3 times as long as broad; snout rounded, 3 to $3\frac{1}{2}$ times in length of head; eye $3\frac{1}{2}$ (young) to 5 times in length of head, interorbital width 4 to $4\frac{1}{2}$ times; mouth terminal, or lower jaw projecting, its width $3\frac{1}{2}$ to 4 times in length of head; lips rather

Fig. 149.



Barbus lucius.
Type. $\frac{1}{2}$.

strongly developed, not extending across chin; two barbels on each side, the anterior very minute, the posterior $\frac{1}{2}$ or $\frac{3}{5}$ diameter of eye. Dorsal III 9–10, equally distant from eye and from caudal, border feebly concave; last simple ray strong, bony, not serrated, $\frac{1}{2}$ to $\frac{2}{3}$ length of head. Anal III 5, not reaching caudal. Pectoral $\frac{1}{2}$ to $\frac{3}{5}$ length of head, not reaching ventral; latter below anterior soft rays of dorsal. Caudal peduncle nearly twice as long as deep. Scales finely striated longitudinally, 43–47 $\frac{6\frac{1}{2}-7\frac{1}{2}}{6\frac{1}{2}-7\frac{1}{2}}$, 3 between lateral line and ventral, 16 round caudal peduncle. Silvery, back brownish, fins orange.

Total length 230 millim.

Angola.

1–2. Types. Lucalla R. at Lucalla. Dr. W. J. Ansorge (C.).

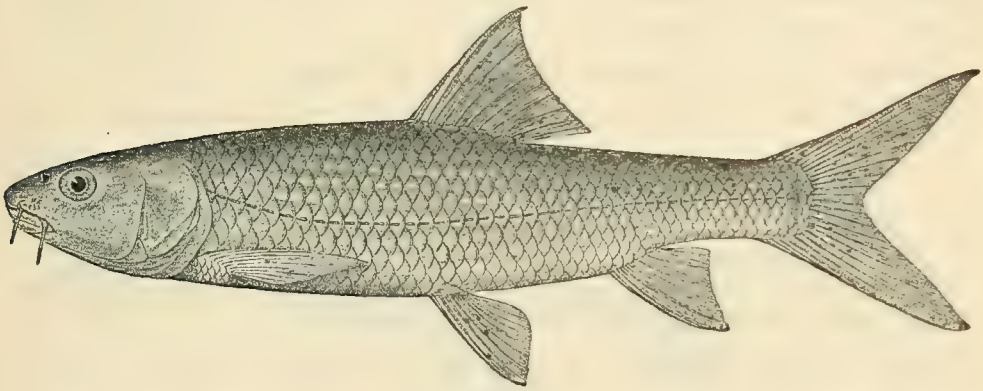
This species occupies an isolated position in the *B. lynni* division.

74*a*. BARBUS SEEBERI.

Gilchrist & Thompson, Ann. S. Afr. Mus. xi. 1913, p. 399, fig.

Depth of body $3\frac{1}{2}$ to $4\frac{1}{4}$ times in total length, length of head 3 to 4 times. Snout rounded, feebly projecting beyond mouth, $2\frac{4}{5}$ to $3\frac{1}{2}$ times in length of head; eye supero-lateral, $4\frac{1}{3}$ to 5 times in length of head, interorbital width $3\frac{1}{4}$ to 4 times; lips moderate, lower interrupted on chin; two barbels on each side, posterior the longer, $\frac{2}{3}$ to as long as eye. Dorsal IV 9, equally distant from occiput and from root of caudal, border concave; last simple ray not enlarged, flexible, segmented, not serrated, $\frac{2}{3}$ to $\frac{4}{5}$ length of head. Anal III 5, not reaching

Fig. 150.



Barbus seeberi.
Type (Ann. S. Afr. Mus.).

caudal. Pectoral $\frac{3}{5}$ to $\frac{4}{5}$ length of head, not reaching ventral; base of latter below middle of dorsal. Caudal peduncle $1\frac{2}{5}$ times to nearly twice as long as deep. Scales longitudinally striated, 41–44 $\frac{7\frac{1}{2}}{8\frac{1}{2}}$, 4–5 between lateral line and ventral, 16–18 round caudal peduncle. Silvery grey, darker above.

Total length 102 millim.

Olifants River, Cape Colony.—Type in S. African Museum, Cape Town.

Distinguished from *B. gilchristi* chiefly by the interrupted lower lip.

75*a*. BARBUS ROBINSONI.

Gilchrist & Thompson, Ann. S. Afr. Mus. xi. 1913, p. 387.

Depth of body nearly $3\frac{3}{5}$ times in total length, length of head 4 times. Snout rounded, $2\frac{4}{5}$ times in length of head, eye a little more than 4

times, interorbital width $2\frac{1}{2}$ times; mouth subinferior, its width $3\frac{3}{4}$ times in length of head; lips moderately developed, lower with a small median lobe; two barbels on each side, anterior about $\frac{3}{4}$ diameter of eye, posterior slightly longer than eye. Dorsal IV 9, situated nearer to root of caudal than to eye, border concave; last simple ray slightly enlarged, bony, flexible, segmented down to its basal third, nearly as long as head. Anal III 5, reaching caudal. Pectoral nearly as long as head, not reaching ventral; base of latter below anterior rays of dorsal. Caudal peduncle $1\frac{1}{6}$ times as long as deep. Scales longitudinally striated, 30 $\frac{6}{5\frac{1}{2}}$, $2\frac{1}{2}$ between lateral line and ventral, 14 round caudal peduncle. Silvery, darker above than below; distal extremity of dorsal dark.

Total length 178 millim.

Natal.—Type in S. African Museum, Cape Town.

Near *B. bowkeri*, but scales fewer and caudal peduncle shorter.

77 *a*. BARBUS FASOLT.

Pappenh. in Schubotz, Wiss. Ergebn. Deutsch. Z.-Afr. Exped., Zool. iii. p. 240, pl. iii. fig. 2 (1914).

Depth of body $3\frac{2}{5}$ times in total length, length of head $3\frac{4}{5}$ times. Snout obtuse, a little more than 3 times in length of head, eye 7 times, interorbital width a little more than twice; mouth inferior, its width nearly $2\frac{1}{2}$ times in length of head; lips much developed, lower uninterrupted, with a short, truncate, median lobe; two barbels on each side, anterior slightly shorter than eye, posterior slightly longer. Dorsal III 9, a little nearer occiput than root of caudal; last simple ray flexible, not enlarged, a little over $\frac{3}{5}$ length of head. Anal III 5, not reaching caudal. Pectoral $\frac{2}{3}$ length of head, not reaching ventral; latter below middle of dorsal. Caudal peduncle nearly $1\frac{3}{4}$ times as long as deep. Scales longitudinally striated, 25–26 $\frac{4\frac{1}{2}}{4\frac{1}{2}}$, 2 between lateral line and ventral, 12 round caudal peduncle. Brown, darker above; each scale with a darker base and a lighter edge.

Total length 500 millim.

Ituri River, Congo.—Type in Berlin Museum.

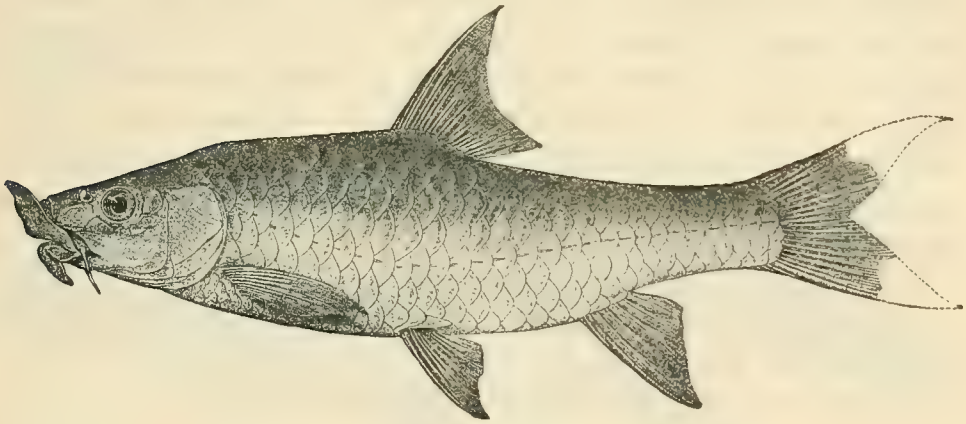
Distinguished from *B. johnstonii* by the lower number of scales.

79 *a*. BARBUS GUNNINGII.

Gilchrist & Thompson, Ann. S. Afr. Mus. xi. 1913, p. 391, fig.

Depth of body $3\frac{1}{5}$ to $3\frac{4}{5}$ times in total length, length of head $3\frac{2}{5}$ to $3\frac{4}{5}$ times. Snout obtusely pointed, not projecting beyond mouth, $2\frac{1}{3}$ to $2\frac{4}{5}$ times in length of head, eye 5 to $5\frac{4}{5}$ times, interorbital width $2\frac{3}{5}$ to 3 times; mouth subinferior, its width $2\frac{2}{3}$ to 3 times in length of head; both lips greatly developed, each more or less strongly produced into an obtusely pointed median lobe; two barbels on each side, anterior $\frac{1}{2}$ to $\frac{4}{5}$ diameter of eye, posterior $\frac{4}{5}$ to $1\frac{1}{5}$ times. Dorsal IV 9, about equally

Fig. 151.



Barbus gunningii.
Type (Ann. S. Afr. Mus.). $\frac{1}{2}$.

distant from eye and from root of caudal, or a little nearer to the latter, border concave; last simple ray segmented, moderately enlarged, from $\frac{7}{10}$ to $\frac{9}{10}$ length of head. Anal III 5, reaching, or almost reaching, root of caudal. Pectoral $\frac{2}{3}$ to $\frac{4}{5}$ length of head, not reaching ventral; base of latter below middle or anterior third of dorsal. Caudal peduncle $1\frac{3}{10}$ to $1\frac{1}{2}$ times as long as deep. Scales longitudinally striated, 28–30 $\frac{5-5\frac{1}{2}}{4\frac{1}{2}}$, $2\frac{1}{2}$–3 between lateral line and root of ventral, 12 round caudal peduncle. Dark yellowish brown above, lighter beneath.

Total length 265 millim.

Transvaal (Thabina R., Pienaars R., and Pretoria).—Types in S. African Museum, Cape Town.

Near *B. zambesensis* and *B. lobochilus*, but fewer scales in the lateral line.

82*a*. BARBUS SABIENSIS.

Gilchrist & Thompson, t. c. p. 397.

Depth of body $3\frac{1}{7}$ to $3\frac{1}{2}$ times in total length, length of head 4 to $4\frac{1}{3}$ times. Snout rounded, feebly projecting, $2\frac{3}{5}$ to $2\frac{4}{5}$ times in length of head, eye $4\frac{1}{3}$ to $5\frac{4}{5}$ times, interorbital width $2\frac{1}{6}$ to $2\frac{1}{2}$ times; mouth inferior, its width $2\frac{1}{3}$ to $3\frac{1}{5}$ times in length of head; lips thin, lower restricted to the sides; lower jaw with an angular edge; two barbels on each side, anterior $\frac{3}{5}$ to $\frac{2}{3}$ diameter of eye, posterior $\frac{7}{10}$ to slightly longer than eye. Dorsal IV 9, originating in advance of ventrals, equally distant from nostrils or eye and from root of caudal, upper border concave; last simple ray very slightly enlarged, segmented down to its basal third, about as long as head. Anal III 5, reaching, or scarcely reaching, caudal. Pectoral $\frac{4}{5}$ to $\frac{6}{10}$ length of head, not reaching ventral, the base of which is below middle of dorsal. Caudal peduncle $1\frac{1}{4}$ to $1\frac{1}{2}$ times as long as deep. Scales with slightly wavy longitudinal striation, 28–30 $\frac{5\frac{1}{2}}{4\frac{1}{2}}$, $2\frac{1}{2}$–3 between lateral line and ventral, 12 round caudal peduncle. Dark or reddish brown above, silvery beneath; dorsal and caudal with a greenish tinge.

Total length 378 millim.

Transvaal (Sabi R., Magalies R., and Malalene).—Types in S. African Museum, Cape Town.

Perhaps not specifically distinct from *B. rhodesianus*.

83. BARBUS VICTORIÆ, Blgr.

Add:—

2. Ad.	Zambesi at Livingstone.	S. African Museum (P.).

83*a*. BARBUS COOKII.

Gilchrist & Thompson, t. c. p. 381, fig.

Depth of body 3 times in total length, length of head $4\frac{1}{5}$ times. Snout rounded, feebly projecting beyond mouth, nearly 3 times in length of head; eye $5\frac{3}{5}$ times in length of head, interorbital width $2\frac{1}{10}$ times; mouth subinferior, its width $2\frac{1}{5}$ times in length of head; lips thin, lower restricted to the sides; lower jaw with a sharp keel covered with a horny sheath. Two barbels on each side, anterior $\frac{3}{5}$ diameter of eye, posterior nearly as long as eye. Dorsal III 9, equally distant from eye and root of caudal, border concave; last simple ray slightly enlarged, bony at the base, slightly longer than

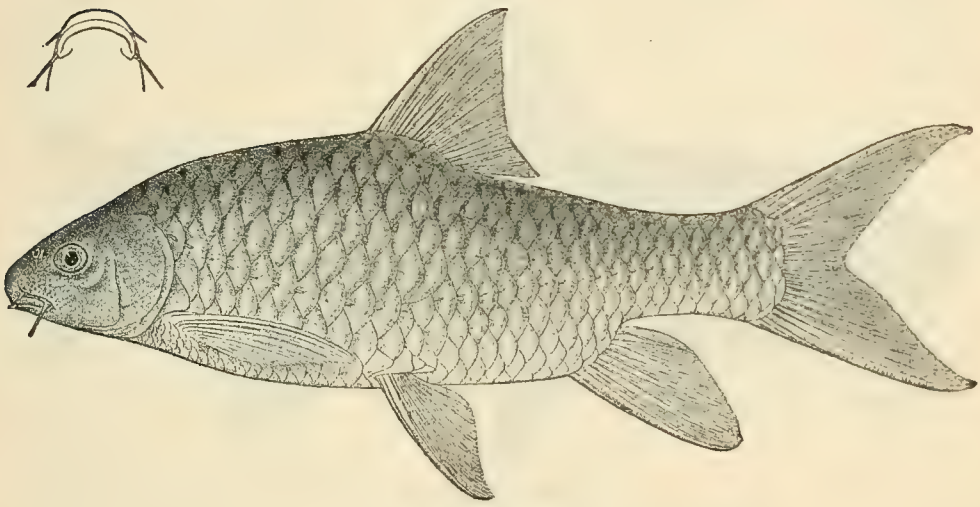
head. Anal II 5, reaching caudal. Pectoral $1\frac{1}{10}$ times as long as head, falciform, scarcely reaching ventral; base of latter below anterior rays of dorsal. Caudal peduncle $1\frac{1}{3}$ times as long as deep. Scales longitudinally striated, 28 $\frac{5}{4}$, $1\frac{1}{2}$ between lateral line and ventral, 14 round caudal peduncle. Greenish, darker above than below; all fins except ventral edged with white; a dark diagonal band on base of each lobe of caudal; scales on upper part of body edged with black.

Total length 328 millim.

Crocodile R., Transvaal.—Type in S. African Museum, Cape Town.

Closely allied to *B. victoriæ*. Barbels longer.

Fig. 152.



Barbus cookii.
Type (Ann. S. Afr. Mus.). $\frac{3}{8}$.

84 *a*. BARBUS SWIERSTRÆ.

Gilchrist & Thompson, t. c. p. 393, fig.

Depth of body $3\frac{2}{5}$ to $3\frac{3}{5}$ times in total length, length of head 4 to $4\frac{1}{3}$ times. Snout blunt, $2\frac{3}{5}$ to 3 times in length of head; eye $5\frac{1}{5}$ to $5\frac{3}{5}$ times in length of head, interorbital width $2\frac{2}{5}$ to $2\frac{3}{4}$ times; mouth inferior, its width $2\frac{3}{5}$ to $2\frac{4}{5}$ times in length of head; lips moderate, lower with a small mental lobe; lower jaw rather sharp-edged; two barbels on each side, subequal or posterior the longer, $\frac{3}{5}$ to about as long as eye; head with minute tubercles. Dorsal IV 9, equally distant from eye and from caudal, border concave; last simple ray slightly enlarged, segmented down to basal third, nearly as long as head. Anal III 5,

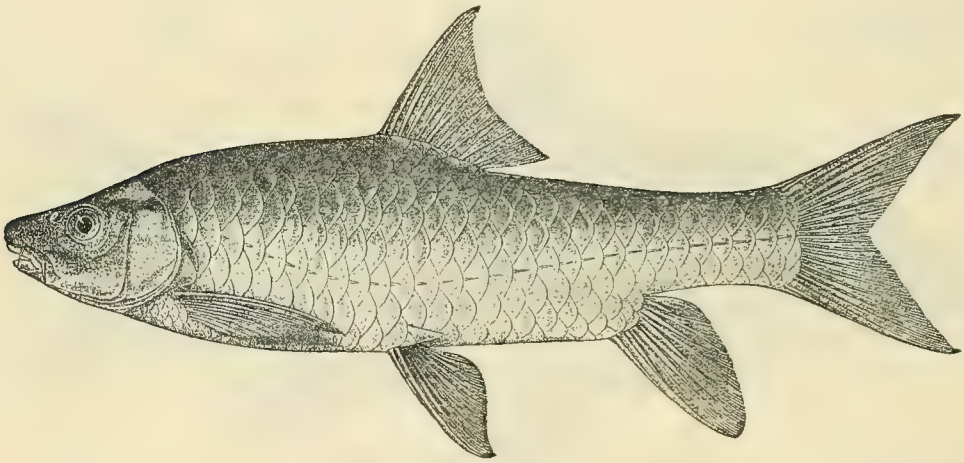
reaching caudal. Pectoral $\frac{4}{5}$ to $\frac{9}{10}$ length of head, not reaching ventral; base of latter below middle of dorsal. Caudal peduncle $1\frac{1}{3}$ to $1\frac{1}{2}$ times as long as deep. Scales longitudinally striated, 28–30 $\frac{5}{4\frac{1}{2}}$, 2 between lateral line and ventral, 12 round caudal peduncle. Dark brown above, yellowish on sides and belly.

Total length 310 millim.

Transvaal (Thabina, Dwaars, Magalies, and Pienaars Rivers).—Types in S. African Museum, Cape Town.

Closely allied to *B. fairbairnii*, but dorsal with concave edge and scales more numerous.

Fig. 153.



Barbus swierstræ.
Type (Ann. S. Afr. Mus.). $\frac{1}{2}$.

86 *a*. BARBUS MAWAMBI.

Pappenh. in Schubotz, Wiss. Ergebn. Deutsch. Z.-Afr. Exped., Zool. iii. p. 241, pl. iv. fig. 1 (1914).

Depth of body nearly 4 times in total length, length of head $3\frac{1}{2}$ times. Snout $3\frac{1}{2}$ times in length of head, eye and interorbital width $3\frac{4}{5}$ times; mouth terminal, its width $4\frac{1}{5}$ times in length of head; lips moderately developed, lower widely interrupted on the chin; two barbels on each side, anterior $\frac{3}{5}$ diameter of eye, posterior $\frac{4}{5}$. Dorsal III 10, a little nearer occiput than root of caudal, border concave; last simple ray not enlarged, entirely segmented, over $1\frac{1}{3}$ times length of head. Anal III 5, not reaching caudal. Pectoral a little more than $\frac{3}{5}$ length of head, not reaching ventral; latter inserted below anterior rays of dorsal. Caudal

peduncle $1\frac{2}{3}$ times as long as deep. Scales longitudinally striated, 29 $\frac{5\frac{1}{2}}{4\frac{1}{2}}$, $2\frac{1}{2}$ between lateral line and ventral, 12 round caudal peduncle. Silvery, brownish on the back, each scale dark at the base; dorsal and caudal grey, other fins yellowish.

Total length 66 millim.

Ituri River, Congo.—Type in Berlin Museum.

Apparently allied to *B. wurtzi*, but mouth terminal and barbels longer.

89 *a*. BARBUS MALACANTHUS.

Pappenh. Mitth. Zool. Mus. Berl. v. 1911, p. 516, fig.

Depth of body $3\frac{1}{4}$ times in total length, length of head nearly $3\frac{1}{2}$ times. Snout rounded, $2\frac{2}{3}$ times in length of head, eye $4\frac{1}{3}$ times, interorbital width $3\frac{1}{2}$ times; mouth inferior, its width $4\frac{1}{3}$ times in length of head; lips moderately developed; two barbels on each side, anterior $\frac{2}{3}$ diameter of eye, posterior $\frac{9}{10}$. Dorsal III 9, equally distant from eye and from root of caudal, border concave; last simple ray ossified only at the base, longer than head. Anal III 5, reaching root of caudal. Pectoral $\frac{4}{5}$ length of head, not reaching ventral; latter inserted below middle of dorsal. Caudal peduncle $1\frac{1}{3}$ times as long as deep. Scales 28 $\frac{4\frac{1}{2}}{4\frac{1}{2}}$, 3 between lateral line and ventral, 12 round caudal peduncle. Silvery grey, each scale darker at the base; belly yellowish; fins greyish black.

Total length 150 millim.

Rio Benito, Spanish Guinea.—Type in Berlin Museum.

Allied to *B. altidorsalis*, but barbels longer.

89 *b*. BARBUS NASUTUS.

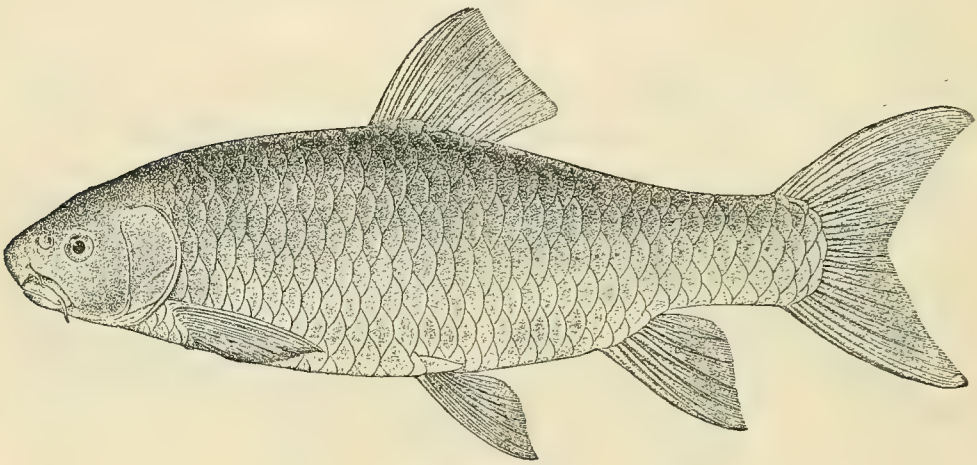
Varicorhinus nasutus, Gilchrist & Thompson, Ann. & Mag. N. H. (8) viii. 1911, p. 477.

Barbus nasutus, Gilchrist & Thompson, Ann. S. Afr. Mus. xi. 1913, p. 396, fig.

Depth of body $3\frac{1}{3}$ times in total length, length of head $4\frac{1}{3}$ times. Snout pointed and prominent, 3 times diameter of eye and a little shorter than postocular portion of head; eye 7 times in length of head and $3\frac{1}{2}$ times in interorbital width; width of mouth $2\frac{1}{3}$ times in length of head; lips moderately developed, lower restricted to the sides; lower jaw with a sharp edge; a pointed rostral flap overlapping symphysis of upper jaw; a double row of papillæ behind premaxillary; two barbels

on each side, posterior longer than anterior and $\frac{4}{5}$ diameter of eye. Dorsal IV 9, border slightly emarginate; last simple ray not enlarged, flexible, smooth, $\frac{9}{10}$ length of head. Anal III 5, reaching base of caudal. Pectoral a little more than $\frac{4}{5}$ length of head and not reaching ventral, which is inserted below posterior half or middle of dorsal. Caudal peduncle $1\frac{1}{5}$ times as long as deep. Scales longitudinally striated, 30 $\frac{5}{7}$; lateral line very indistinct anteriorly and marked on posterior half of body by small round pits; 3 rows of scales between

Fig. 154.



Barbus nasutus.
Type (Ann. S. Afr. Mus.). $\frac{1}{4}$.

lateral line and ventral, 12 round caudal peduncle. Bluish above, flesh-coloured beneath.

Total length 360 millim.

Sabi River, Transvaal, and Victoria Falls, Upper Zambesi.—Types in S. African Museum, Cape Town.

Occupies an isolated position at the end of Division I. C. of the Synopsis; distinguished from *Varicorhinus* by the development of the lip on the sides of the lower jaw.

89*c*. BARBUS ALLUAUDI.

Pellegr. Mém. Soc. Zool. France, xxii. 1910, p. 287, pl. xiv. fig. 2.

Depth of body equal to length of head, 4 times in total length. Snout rounded, $1\frac{1}{3}$ times diameter of eye, which is 4 times in length of head; mouth inferior, strongly arched, its width hardly $\frac{1}{3}$ length of head; a

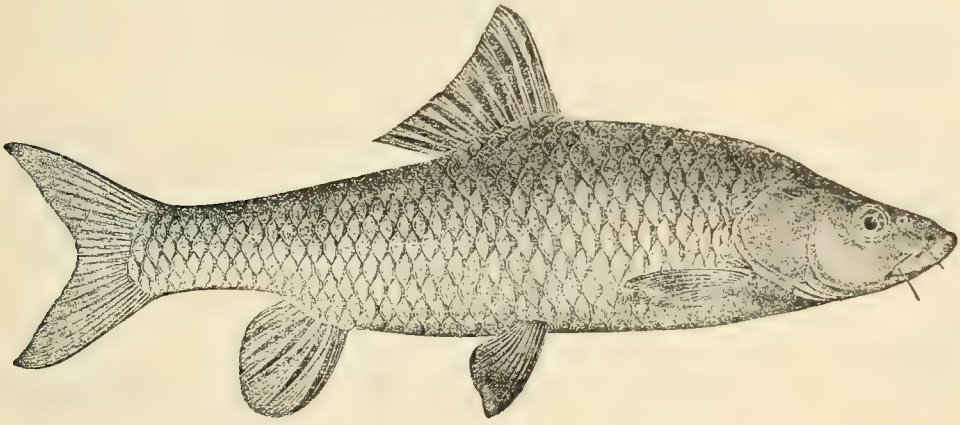
single, minute, almost imperceptible barbel at the angle of the mouth. Dorsal III 9–10, originating slightly nearer end of snout than root of caudal; last simple ray flexible, about $\frac{3}{4}$ length of head. Anal III 5, not reaching caudal. Pectoral $\frac{3}{4}$ length of head, not reaching ventral; latter below middle of dorsal. Caudal peduncle $1\frac{1}{2}$ times as long as deep. Scales 35–37 $\frac{5\frac{1}{2}}{8}$, $3\frac{1}{2}$ between lateral line and ventral, 12 round caudal peduncle. Olive-brown above, silvery on the sides; a black spot on caudal peduncle at base of caudal; dorsal and caudal greyish, other fins yellow.

Total length 90 millim.

Wimi R., Mount Ruwenzori.—Types in Paris Museum.

Also occupies an isolated position at the end of Division I. C. of the Synopsis.

Fig. 155.



Barbus aspius.
Type (A. M. C.). $\frac{1}{3}$.

90*a*. BARBUS ASPIUS.

Bouleng. Ann. Mus. Congo, Zool. ii. 3, p. 14, pl. xxii. fig. 1 (1912).

Depth of body $3\frac{2}{3}$ to 4 times in total length, length of head $3\frac{1}{2}$ to $3\frac{2}{3}$ times. Head $2\frac{1}{4}$ to $2\frac{1}{3}$ as long as broad; snout rounded, $3\frac{1}{2}$ times in length of head; lower jaw strongly projecting; eye 6 times in length of head, interorbital width 4 to $4\frac{1}{2}$ times; width of mouth 4 to $4\frac{1}{2}$ times in length of head; lips rather strongly developed on the sides, lower broadly interrupted on the chin; two barbels on each side, anterior $\frac{3}{4}$ to 1 diameter of eye, posterior $1\frac{1}{4}$ to $1\frac{1}{3}$. Dorsal III–IV 10, equally distant from eye and from root of caudal, border concave; last simple

ray strong, bony, not serrated, its rigid part $\frac{1}{2}$ to $\frac{3}{5}$ length of head. Anal III 5, not reaching caudal. Pectoral $\frac{3}{5}$ to $\frac{2}{3}$ length of head, not reaching ventral; latter inserted below anterior soft rays of dorsal. Caudal peduncle nearly twice as long as deep. Scales longitudinally striated, 34–36 $\frac{5\frac{1}{2}-6\frac{1}{2}}{5\frac{1}{2}}$, 3 between lateral line and ventral, 12 round caudal peduncle. Brown above, scales edged with darker, white beneath; fins brown, pectoral and ventral edged with white.

Total length 420 millim.

Lebuzi River, Chiloango.

1. Type.	Lebuzi R. at Boma Vonde.	Dr. W. J. Ansorge (C.).

Very similar to *B. progenys*, but last simple ray stronger and ossified, as in the members of the *B. bynni* section.

91. BARBUS TRIMACULATUS, Peters.

Gilchrist & Thompson, Ann. S. Afr. Mus. xi. 1913, p. 401.
Barbus poechii, Steind. Anz. Ak. Wien, 1911, p. 531.

Add:—

78–81. Ad.	Okovango R., L. Ngami.	R. B. Woosnam, Esq. (C.).
82. Ad.	Kafue R., N. Rhodesia.	L. C. Heath, Esq. (P.).
83–85. Ad. & hgr.	Msundusi R., Ubombo district, Zululand.	F. Toppin, Esq. (C.); Durban Museun (P.).

92. BARBUS NUMMIFER, Blgr.

Add:—

10. Ad.	Malawa R., Kavirondo, 4000 ft.	Sir F. J. Jackson (P.).

95. BARBUS BISCARENSIS, Blgr.

Add:—

8–13. Ad. & hgr.	Wed Biskra.	Lord Rothschild (P.).
14–15. Ad.	Khenchela, Prov. Constantine.	,,
16–21. Ad. & hgr.	Fontaine Chaude, near Khenchela.	,,

96. BARBUS CALLENSIS, C. & V.

Barbus callensis, var. *figuigensis*, Pellegr. Bull. Soc. Zool. France, xxxviii. 1913, p. 119.

Add:—

33–42. Yg.	Hammam Meskoutine, in warm water.	R. Gurney, Esq. (P.).

97. BARBUS SETIVIMENSIS, C. & V.

Add:—

30–31. Hgr.	Lalla Marnia, Prov. Oran.	Lord Rothschild and Dr. E. Hartert (P.).

101. BARBUS SERRA, Peters.

Gilchrist & Thompson, Ann. S. Afr. Mus. xi. 1913, p. 403.

102. BARBUS PALUDINOSUS, Peters.

Gilchrist & Thompson, t. c. p. 404.

Add:—

70. Ad.	Okovango R., L. Ngami.	R. B. Woosnam, Esq. (C.).
71–72. Ad.	Maji Chumbi, near coast of Brit. E. Africa, in salt water.	A. B. Percival, Esq. (P.).
73–74. Ad.	Msundusi R., Ubombo district, Zululand.	F. Toppin, Esq. (C.); Durban Museum (P.).

105. BARBUS MATTOZI, Guinar.

Add:—

1–4. Ad., hgr., & yg.	Lucalla R. at Lucalla.	Dr. W. J. Ansorge (C.).
5–10. Ad., hgr., & yg.	„ Kalenge.	„

106. BARBUS RAPAX, Stdr.

Gilchrist & Thompson, t. c. p. 408.

106 *a*. BARBUS HAMILTONII.

Gilchrist & Thompson, t. c. p. 406, fig.

Depth of body $3\frac{1}{4}$ to $3\frac{4}{5}$ times in total length, length of head $3\frac{3}{5}$ to 4 times. Snout rounded, 3 times in length of head, eye $3\frac{2}{5}$ to 4 times, interorbital width 3 to $3\frac{2}{5}$ times; mouth subinferior, its width 3 to $3\frac{2}{5}$ times in length of head; lips moderately developed, lower continuous across chin; two barbels on each side, anterior $\frac{2}{5}$ to $\frac{2}{3}$ diameter of eye, posterior $\frac{4}{5}$ to as long as eye. Dorsal III 8; equally distant from middle or posterior border of eye and from root of caudal, upper border concave; last simple ray strong, bony, strongly serrated down to basal third, feebly curved, as long as or a little shorter than head. Anal III 5, not reaching caudal. Pectoral $\frac{7}{10}$ to $\frac{4}{5}$ length of head, not or scarcely

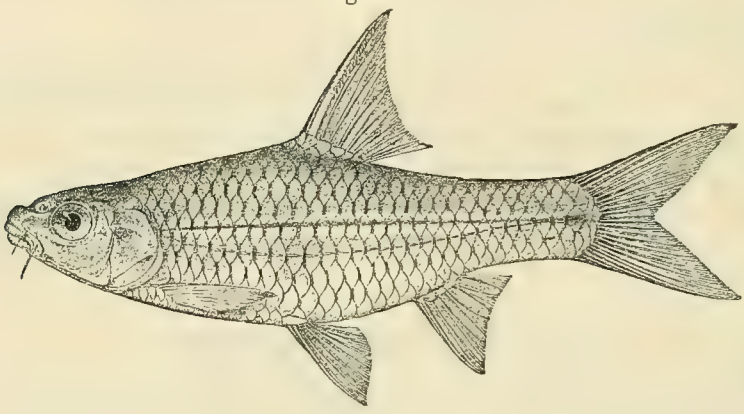
reaching ventral; base of latter slightly in advance of anterior rays of dorsal. Caudal peduncle $1\frac{2}{5}$ to $1\frac{2}{3}$ times as long as deep. Scales radiately striated, 29–33 $\frac{5\frac{1}{2}}{4\frac{1}{2}}$, $2\frac{1}{2}$ between lateral line and ventral, 16 round caudal peduncle. Silvery, brownish above; a faint dark lateral streak; scales with dark borders.

Total length 72 millim.

Sabi R., Transvaal.—Types in S. African Museum, Cape Town.

Allied to *B. rapax*, but snout rounded and mouth subinferior.

Fig. 156.



Barbus hamiltonii.
Type (Ann. S. Afr. Mus.). $\frac{3}{2}$.

106 *b*. BARBUS BROOKINGII.

Gilchrist & Thompson, l. c. fig.

Depth of body $3\frac{2}{3}$ times in total length, length of head 4 times. Snout blunt, $3\frac{2}{7}$ times in length of head; eye $4\frac{1}{5}$ times in length of head, interorbital width $3\frac{5}{6}$ times; mouth small, subinferior, its width $3\frac{2}{7}$ times in length of head; lips thick, lower cleft in centre and jaw sharp-edged; two barbels on each side, anterior nearly $\frac{1}{2}$ diameter of eye, posterior $\frac{3}{4}$; a groove across snout in front of nostrils. Dorsal III 7, equally distant from eye and from root of caudal, border straight; last simple ray feebly enlarged, feebly serrated at distal extremity, curved, nearly $\frac{3}{4}$ length of head. Anal III 5, not reaching caudal. Pectoral nearly $\frac{2}{3}$ length of head, not reaching ventral; base of latter situated in advance of dorsal. Caudal peduncle $1\frac{4}{5}$ times as long as deep. Scales radiately striated, 33 $\frac{5\frac{1}{2}}{4\frac{1}{2}}$, $3\frac{1}{2}$ between lateral line and ventral, 14 round caudal peduncle. Light yellowish brown; a dark line from above origin of lateral line to base

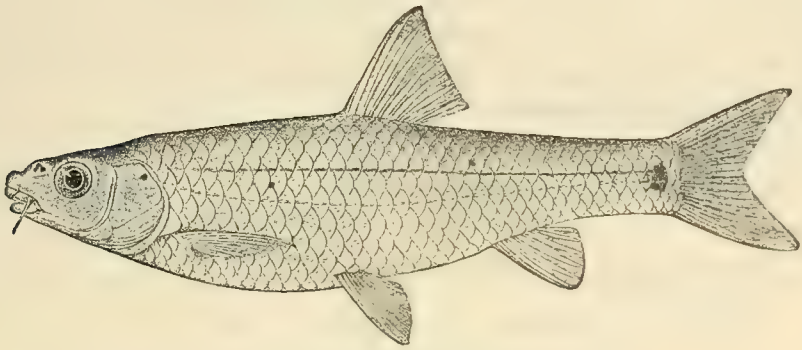
of caudal, ending in a small dark spot; a dark line on back behind dorsal fin.

Total length 92 millim.

East London, Cape Colony.—Type in S. African Museum, Cape Town.

Near the preceding, but dorsal with 7 branched rays and $3\frac{1}{2}$ scales between lateral line and ventral.

Fig. 157.



Barbus brookingii.
Type (Ann. S. Afr. Mus.).

109. BARBUS LONGICAUDA, Blgr.

Gilchrist & Thompson, t. c. p. 407.

Recorded from Wonderfontein, Transvaal.

111. BARBUS CAPENSIS, A. Smith.

Gilchrist & Thompson, t. c. p. 412.

112. BARBUS SERRIFER, Blgr.

Add:—

9. Hgr.	Between Arebi and Aba, Uelle.	Capt. Hutereau (C.).

112*a*. BARBUS MOHASICUS.

Pappenh. in Schubotz, Wiss. Ergebn. Deutsch. Z.-Afr. Exped., Zool. iii. p. 241, pl. iv. fig. 2 (1914).

Depth of body $3\frac{1}{5}$ to $3\frac{1}{2}$ times in total length, length of head $3\frac{1}{3}$ to $3\frac{2}{3}$ times. Snout very obtuse, as long as or a little shorter than eye, which is $3\frac{1}{2}$ to 4 times in length of head; interorbital width $2\frac{3}{4}$ to $3\frac{1}{10}$ times in

length of head; mouth terminal, its width equal to diameter of eye; lips moderate; two pairs of barbels, anterior as long as eye or slightly longer, posterior twice as long. Dorsal II 7, nearly equally distant from occiput and from root of caudal, border feebly concave; last simple ray strong, bony, strongly serrated, bony part $\frac{1}{2}$ to $\frac{3}{5}$ length of head. Anal II 5, not reaching caudal. Pectoral $\frac{2}{3}$ to $\frac{3}{4}$ length of head, not reaching ventral; latter partly or entirely in advance of dorsal. Caudal peduncle nearly $1\frac{1}{2}$ times as long as deep. Scales radiately striated, 27 $\frac{5\frac{1}{2}}{4\frac{1}{2}}$, 2 between lateral line and ventral, 12 round caudal peduncle. Silvery, brown above; a more or less distinct grey streak above the lateral line, with more or less numerous dark dots, the last at the base of the caudal.

Total length 65 millim.

Lake Mohasi, Ruanda, German East Africa.—Types in Berlin Museum.

Perhaps not specifically distinct from *B. serrifer*.

112*b*. BARBUS LUAZOMELÆ.

Lönnb. Handl. Svensk. Vet. Ak. xlvii. no. 6, 1911, p. 40.

Depth of body $3\frac{1}{2}$ to $3\frac{3}{4}$ times in total length, length of head 4 times. Snout rounded, $1\frac{1}{2}$ (young) to 2 times as long as eye, which is 4 (young) to 6 times in length of head; interorbital width $2\frac{1}{2}$ to nearly 3 times in length of head; mouth small, terminal; lips feebly developed; two pairs of barbels, posterior longer, twice as long as eye. Dorsal III 7, equally distant from eye and from root of caudal, border nearly straight; last simple ray strong, bony, serrated, ossified part $\frac{3}{5}$ to $\frac{2}{3}$ length of head. Anal III 5, not reaching caudal. Pectoral $\frac{3}{4}$ length of head, not reaching ventral; base of latter partly in advance of dorsal. Caudal peduncle $1\frac{1}{2}$ to $1\frac{2}{3}$ times as long as deep. Scales radiately striated, 26–27 $\frac{4\frac{1}{2}}{4\frac{1}{2}}$, 3 between lateral line and ventral, 12 round caudal peduncle. Olive above, silvery-white beneath; a darker stripe along the side of the body.

Total length 105 millim.

Luazomela River, Guaso Nyiri, British East Africa.—Types in Stockholm Museum.

1–2. Two of the types. Luazomela R. Prof. E. Lönnberg (P.).

Distinguished from *B. serrifer* by the smaller eye.

112*c*. BARBUS GUINEENSIS.

Pellegr. Bull. Soc. Zool. France, xxxviii. 1913, p. 239.

Depth of body equal to length of head, $3\frac{1}{4}$ to $3\frac{3}{4}$ times in total length. Snout rounded, as long as eye, which is $3\frac{1}{2}$ to $4\frac{1}{2}$ times in length of head and 1 to $1\frac{1}{2}$ times in interorbital width; mouth subinferior; lips feebly developed; two pairs of barbels, posterior a little longer and $1\frac{1}{2}$ to 2 times as long as eye. Dorsal III 7, equally distant from eye and from root of caudal, border straight; last simple ray bony but rather feeble, finely serrated, $\frac{2}{3}$ length of head. Anal III 5, not reaching caudal. Pectoral $\frac{2}{3}$ to $\frac{3}{4}$ length of head, reaching or not ventral; latter partly anterior to dorsal. Caudal peduncle $1\frac{1}{3}$ to $1\frac{1}{2}$ times as long as deep. Scales radiately striated, 26–27 $\frac{4\frac{1}{2}}{4\frac{1}{2}}$, $2\frac{1}{2}$–3 between lateral line and ventral, 12 round caudal peduncle. Brownish above, yellowish beneath; a more or less distinct small dark spot at root of caudal.

Total length 620 millim.

Kikulo River, French Guinea.—Types in Paris Museum.

Appears to differ from *B. serrifer* in the subinferior mouth.

114. BARBUS MINCHINI, Blgr.

Add:—

3. Ad.	L. Salisbury.	Sir F. J. Jackson (P.).
4–10. Ad.	Malawa R., Kavirondo, 4000 ft.	,,

117. BARBUS LATICEPS, Pfeff.

Add:—

1–8. Ad.	River near Kilosa (Wami System), Usagara, German E. Africa.	Dr. E. J. Baxter (C.).

120. BARBUS KERSTENII, Peters.

Gilchrist & Thompson, Ann. S. Afr. Mus. xi. 1913, p. 411.

Recorded from Komati Poort, Transvaal.

120*a*. BARBUS LUHONDO.

Pappenh. in Schubotz, Wiss. Ergebn. Deutsch. Z.-Afr. Exped., Zool. iii. p. 242, pl. iv. fig. 3 (1914).

Depth of body $3\frac{1}{6}$ to $3\frac{1}{3}$ times in total length, length of head $3\frac{9}{10}$ to $4\frac{1}{5}$ times. Snout obtuse, as long as or shorter than eye, which is about 4 times in length of head; interorbital width $2\frac{1}{4}$ to $2\frac{1}{2}$ times in length

of head; mouth small, terminal; two pairs of barbels, posterior longer, 1 to $1\frac{1}{4}$ diameters of eye. Dorsal III 6–7, equally distant from occiput and from root of caudal, border very feebly concave; last simple ray strong, bony, strongly serrated, bony part $\frac{3}{5}$ to $\frac{3}{4}$ length of head. Anal III 5, not reaching caudal. Pectoral $\frac{2}{3}$ length of head, not reaching ventral; latter partly or entirely in advance of origin of dorsal. Caudal peduncle $1\frac{3}{4}$ times as long as deep. Scales radiately striated, 23–28 $\frac{4\frac{1}{2}}{4\frac{1}{2}}$, $2\frac{1}{2}$–3 between lateral line and ventral, 12 round caudal peduncle. Brown above, silvery on the sides, yellowish beneath; a dark lateral stripe, sometimes broken up into spots.

Total length 80 millim.

Lake Luhondo, N.W. Ruanda, German East Africa.—Types in Berlin Museum.

Doubtfully distinct from *B. kerstenii*.

120*b*. BARBUS RUFUA.

Pappenh. t. c. p. 243, pl. iv. fig. 4.

Depth of body $3\frac{1}{2}$ to $3\frac{5}{6}$ times in total length, length of head $3\frac{3}{4}$ to nearly 4 times. Snout obtuse, nearly as long as eye, which is 4 times in length of head; interorbital width $2\frac{1}{3}$ to $2\frac{1}{2}$ times in length of head; mouth small, terminal; two pairs of barbels, anterior $1\frac{1}{4}$ diameters of eye, posterior $1\frac{3}{5}$. Dorsal III 7, equally distant from occiput and from root of caudal, border feebly concave; last simple ray strong, bony, strongly serrated, bony part $\frac{2}{3}$ length of head. Anal III 5, not reaching anal. Pectoral $\frac{3}{4}$ to $\frac{4}{5}$ length of head, not reaching ventral; latter partly or entirely in advance of origin of dorsal. Scales radiately striated, 24–30 $\frac{4\frac{1}{2}}{5\frac{1}{2}}$, 3 between lateral line and ventral, 12 round caudal peduncle. Brown above, silvery on the side; a plumbeous stripe above the lateral line and usually a blackish spot at the base of the caudal; fins yellowish.

Total length 62 millim.

Mpororo, Rufua, German East Africa.—Types in Berlin Museum.

Also closely allied to *B. kerstenii*, but eye smaller.

121. BARBUS EUTÆNIA, Blgr.

Gilchrist & Thompson, Ann. S. Afr. Mus. xi. 1913, p. 411.

Add :—

21–22. Ad.	Quanza R. at Dondo, Angola.	Dr. W. J. Ansorge (C.).

23–24. Yg.	Umsitu R. at Broken Hill, N.W. Rhodesia.	Rev. F. A. Rogers and E. C. Chubb, Esq. (P.).
25. Hgr.	Solwezi R., N. Rhodesia.	F. H. Melland, Esq. (P.).

123. BARBUS NAIROBIENSIS, Blgr.

Add:—

5–8. Ad. & hgr.	Nairobi.	Sir F. J. Jackson (P.).
9–12. Ad. & hgr.	Eusso Nyiro, above falls.	A. B. Percival, Esq. (P.).

124. BARBUS PORTALI, Blgr.

Add:—

17–18. Ad.	Malawa R., Kavirondo, 4000 ft.	Sir F. J. Jackson (P.).
19–28. Ad. & hgr.	Hima R., E. foot-hills of Ruwenzori, 3500 ft.	,,

125. BARBUS CARPIO, Pfeff.

Pappenh. in Schubotz, Wiss. Ergebn. Deutsch. Z.-Afr. Exped., Zool. iii. p. 244.

Recorded from the Congo System (Upper Ituri).

126. BARBUS PERCIVALI, Blgr.

Add:—

11–13. Hgr.	Eusso Nyiro, above falls.	A. B. Percival, Esq. (P.).
14–23. Ad. & hgr.	Saya.	,,

127. BARBUS ZANZIBARICUS, Peters.

Add:—

4–11. Yg.	Bereza, German E. Africa.	Dr. E. J. Baxter (C.).

127 *a*. BARBUS ARGYROTÆNIA.

Bouleng. Proc. Zool. Soc. 1912, p. 674, pl. lxxix. fig. 1.

Depth of body $2\frac{3}{4}$ to 3 times in total length, length of head $3\frac{1}{2}$ to $3\frac{3}{4}$ times. Snout rounded, shorter than eye, which is $2\frac{3}{4}$ to 3 times in length of head and equals or nearly equals interorbital width; mouth small, subinferior; lips feebly developed; two pairs of barbels, anterior about $\frac{2}{3}$ diameter of eye, posterior as long as or slightly longer than eye. Dorsal III 8, equally distant from posterior border or centre of eye and from base of caudal, border feebly concave; last simple ray enlarged, bony, strongly serrated behind. Anal III 5, not reaching caudal. Pectoral a little shorter than head, not reaching ventral; base of latter

below origin of dorsal. Caudal peduncle a little longer than deep. Scales radiately striated, 30–31 $\frac{5\frac{1}{2}}{5\frac{1}{2}}$, 3 between lateral line and ventral, 14–16 round caudal peduncle. Pale sand-colour, with a silvery lateral band, which is sometimes edged above with a streak of black pigment; fins white, often tinged with pale orange at the base.

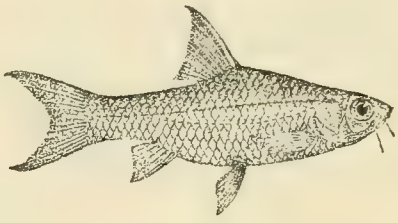
Total length 53 millim.

Eusso Nyiro, British East Africa.

1–10. Types. Eusso Nyiro, below falls. A. B. Percival, Esq. (P.).

Near *B. zanzibaricus*, but body deeper and with more scales round caudal peduncle.

Fig. 158.



Barbus argyrotænia.
Type (P. Z. S. 1912).

130. BARBUS KESSLERI, Stdr.

Add:—

25–28. Ad. & yg.	Lucalla R. at Lucalla.	Dr. W. J. Ansorge (C.).
29–30. Ad.	L. Kilunda, Bengo R.	,,

131. BARBUS HOLOTÆNIA, Blgr.

Pappenh. Mitth. Zool. Mus. Berl. v. 1911, p. 515; Bouleng. Ann. Mus. Congo, ii. no. 3, p. 14 (1912).

Barbus squamosissimus, Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 26, pl. iii. fig. 2.

Add:—

39. Ad.	Lucalla R. at Kalenge, Angola.	Dr. W. J. Ansorge (C.).
40–42. Ad., hgr., & yg.	Benzo R. at Cabiri, ,,	,,
43–44. Ad. & yg.	Lucola R. near Cabinda.	,,
45–49. Ad. & yg.	Chiloango R. at Mayili.	,,
50–51. Ad.	Chiloango R. near Lella.	,,
52. Hgr.	Chiloango Town.	,,
53–54. Ad.	Luali R. (Chiloango) at Buco Zau.	,,

55–56. Yg.	Luali R. (Chiloango) at Lundo.	Dr. W. J. Ansorge (C.).
57. Ad.	Lebuzi R. (Chiloango) at Kuka Muno.	,,
58–60. Hgr. & yg.	Luculla R. (Chiloango).	,,
61. Ad.	Dunga, Uelle.	Capt. Hutereau (C.).

133. BARBUS GUIRALI, Thomin.

Pappenh. Mitth. Zool. Mus. Berl. v. 1911, p. 513.

Add :—

10. Ad.	Akonolinga, Nyong R., S. Cameroon.	G. L. Bates, Esq. (C.).

134. BARBUS LITAMBA, Keilh.

Keilhack, Mitth. Zool. Mus. Berl. v. 1910, p. 99, pl. ii. fig. 2.

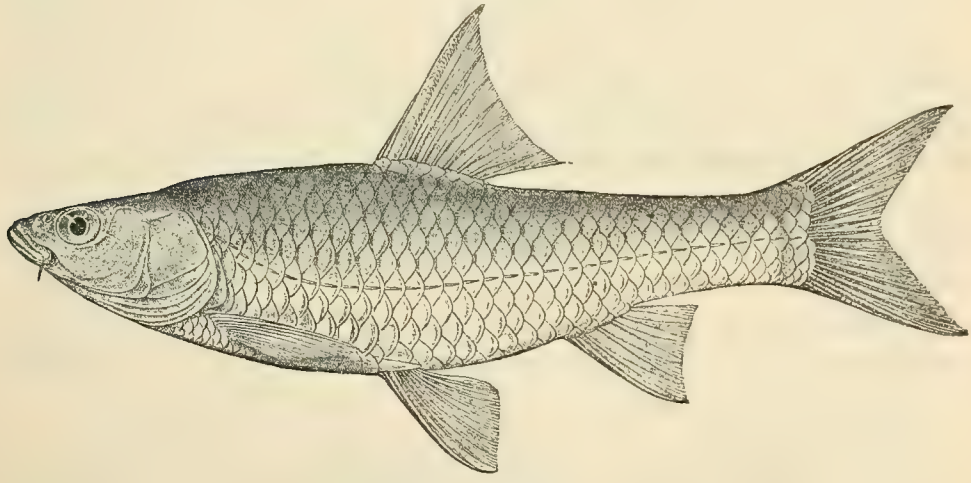
135. BARBUS TREVELYANI, Gthr.

Gilchrist & Thompson, Ann. S. Afr. Mus. xi. 1913, p. 414.

Add :—

10–39. Ad., hgr., & yg.	Buffalo R. at King William's Town.	Major H. Trevelyan (P.).

Fig. 159.



Barbus serrula.
Type (Ann. S. Afr. Mus.).

135*a*. BARBUS SERRULA.

Gilchrist & Thompson, l. c. fig.

Depth of body $3\frac{3}{5}$ times in total length, length of head $3\frac{1}{5}$ times. Snout rounded, $3\frac{2}{5}$ times in length of head; eye $5\frac{1}{7}$ times, interorbital

width $4\frac{1}{2}$ times; mouth terminal, its width $3\frac{3}{5}$ times in length of head; lips feebly developed; a single barbel on each side, $\frac{2}{3}$ diameter of eye. Dorsal III 8, equally distant from eye and from root of caudal, border concave; last simple ray strong, bony, straight, strongly serrated in its upper half, its rigid part $\frac{3}{4}$ length of head. Anal III 5, not reaching caudal. Pectoral nearly $\frac{2}{3}$ length of head, scarcely reaching ventral; base of latter below anterior rays of dorsal. Caudal peduncle $1\frac{4}{5}$ times as long as deep. Scales radiately striated, 31 $\frac{5\frac{1}{2}}{4\frac{1}{2}}$, $2\frac{1}{2}$ between lateral line and ventral, 16 round caudal peduncle. Reddish brown above silvery on sides and belly.

Total length 116 millim.

Pienaars River, Transvaal.—Type in S. African Museum, Cape Town.

Distinguished from *B. trevelyanus* by the stronger and more strongly serrated spine of the dorsal and the lower number of scales.

135*b*. BARBUS SAUVAGII.

Pellegr. Bull. Soc. Zool. France, xxxvii. 1912, p. 107.

Depth of body equal to length of head, $3\frac{1}{2}$ times in total length. Snout obtusely pointed, $3\frac{1}{3}$ times in length of head; eye $4\frac{3}{4}$ times in length of head, $1\frac{1}{4}$ times in interorbital width; mouth terminal, large, lower jaw projecting; lips moderately developed; a single barbel on each side, $\frac{2}{3}$ diameter of eye. Dorsal III 8, equally distant from end of snout and from root of caudal, border concave; last simple ray strong, bony, finely serrated in its distal half, $\frac{2}{3}$ length of head. Anal III 5, not reaching caudal. Pectoral $\frac{2}{3}$ length of head, nearly reaching ventral; base of latter partly in front of dorsal. Caudal peduncle $1\frac{2}{3}$ times as long as deep. Scales radiately striated, 33 $\frac{5\frac{1}{2}}{5\frac{1}{2}}$, $2\frac{1}{2}$ between lateral line and ventral, 14 round caudal peduncle. Silvery, brownish on the back; fins yellowish.

Total length 220 millim.

Interior of South Africa.—Type in Paris Museum.

Distinguished from the preceding by the projecting lower jaw and the more feebly serrated spine of the dorsal.

136. BARBUS APLEUROGRAMMA, Blgr.

? Pappenh. in Schubotz, Wiss. Ergebn. Deutsch. Z.-Afr. Exped., Zool. iii. p. 245 (1914).

138. BARBUS BURCHELLI, A. Smith.

Gilchrist & Thompson, Ann. S. Afr. Mus. xi. 1913, p. 417.

140. BARBUS BURGI, Blgr.

Gilchrist & Thompson, t. c. p. 419.

141. BARBUS VULNERATUS, Casteln.

Gilchrist & Thompson, t. c. p. 415.

143. BARBUS HEMIPLEUROGRAMMA, Blgr.

Gilchrist & Thompson, t. c. p. 426.

143 *a*. BARBUS LUJÆ.

Bouleng. Bull. Soc. Nat. Luxemb. 1913, no. 3.

Depth of body equal to length of head, $3\frac{1}{3}$ to $3\frac{1}{2}$ times in total length. Snout rounded, shorter than eye, which is 3 times in length of head and $1\frac{1}{3}$ times in interorbital width; mouth small, terminal; lips moderately developed; two barbels on each side, anterior about $\frac{1}{2}$ diameter of eye, posterior $\frac{2}{3}$ to $\frac{3}{4}$. Dorsal III 7, equally distant from eye and from caudal, border feebly emarginate; last simple ray not enlarged, flexible, as long as head. Anal III 5, not reaching caudal. Pectoral $\frac{3}{4}$ length of head, not reaching ventral; base of latter below anterior rays of dorsal. Caudal peduncle $1\frac{1}{2}$ times as long as deep. Scales radiately striated, 26–27 $\frac{4\frac{1}{2}}{4\frac{1}{2}}$; lateral line incomplete, interrupted, or reduced to the 5–9 first scales. Yellow above, white beneath; three or four round black spots forming a series on each side, the last at the base of the caudal fin; a small black spot at the base of the anal; fin white.

Total length 26 millim.

Congo.—Types in Luxemburg Museum.

1–4. Types.	Kondue, Kasai.	M. E. Luja (C.); Luxemburg Museum (P.).

Distinguished from *B. hemipleurogramma* by the shorter barbels.

144. BARBUS GURNEYI, Gthr.

Add:—

27–28. Hgr.	Krantzkloof, Natal.	Durban Museum (P.).

146 *a*. BARBUS UROTÆNIA.

Bouleng. Rev. Zool. Afr. ii. 1913, p. 158.

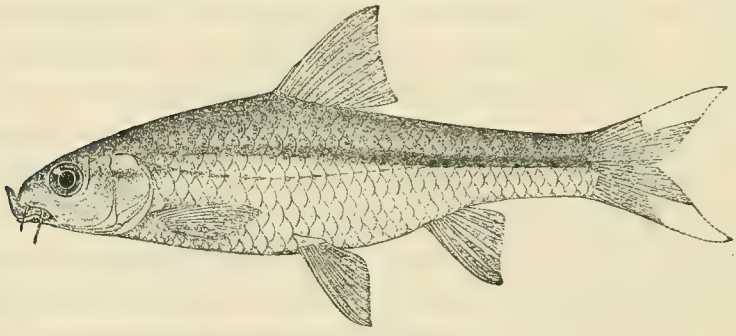
Depth of body equal to length of head, $3\frac{1}{4}$ to $3\frac{1}{3}$ times in total length. Snout rounded, hardly as long as eye, which is 3 times in length of head and equals interorbital width; mouth small, inferior; lips feebly developed; two barbels on each side, anterior $\frac{1}{3}$ diameter of eye, posterior $\frac{1}{2}$. Dorsal IV 9, equally distant from eye and from caudal, border feebly emarginate; last simple ray not enlarged, flexible, a little shorter than head. Anal III 5, not reaching caudal. Pectoral $\frac{2}{3}$ length of head, not reaching ventral; base of latter below middle of dorsal. Caudal peduncle as long as deep. Scales radiately striated, 27–29 $\frac{4\frac{1}{2}-5\frac{1}{2}}{5\frac{1}{2}}$, 2–$2\frac{1}{2}$ between lateral line and ventral, 12 round caudal peduncle. Olive-brown above, whitish beneath; a rather ill-defined brown lateral band, prolonged on the lower lobe of the caudal fin.

Total length 50 millim.

Uelle, Upper Congo.—Type in Congo Museum, Tervueren.

Distinguished from *B. inermis* chiefly by the shorter caudal peduncle.

Fig. 160.



Barbus labialis.
Type (Ann. S. Afr. Mus.). $\frac{2}{7}$.

146 *b*. BARBUS LABIALIS.

Gilchrist & Thompson, Ann. S. Afr. Mus. xi. 1913, p. 424, fig.

Depth of body $3\frac{3}{5}$ times in total length, length of head 4 times. Snout $3\frac{4}{5}$ times in length of head, eye $4\frac{1}{5}$ times, interorbital width $3\frac{1}{2}$ times; mouth subinferior, $3\frac{4}{5}$ times in length of head; lips moderate, upper produced into a median lobe about $\frac{1}{2}$ diameter of eye in length. Two barbels on each side, anterior nearly as long as eye, posterior $1\frac{1}{5}$ times diameter of eye. Dorsal III 8, equally distant from nostrils and from

root of caudal, border feebly concave; last simple ray not enlarged, not serrated, nearly as long as head. Anal III 5, not reaching caudal. Pectoral $\frac{3}{4}$ length of head, not reaching ventral; base of latter below middle of dorsal. Caudal peduncle $2\frac{2}{3}$ times as long as deep. Scales radiately striated, 35 $\frac{6\frac{1}{2}}{5\frac{1}{2}}$, $3\frac{1}{2}$ between lateral line and ventral, 14 round caudal peduncle. Yellowish brown, darker above than below; a dark lateral streak from border of preopercle to root of caudal.

Total length 77 millim.

Aapjes River, Transvaal.—Type in S. African Museum, Cape Town.

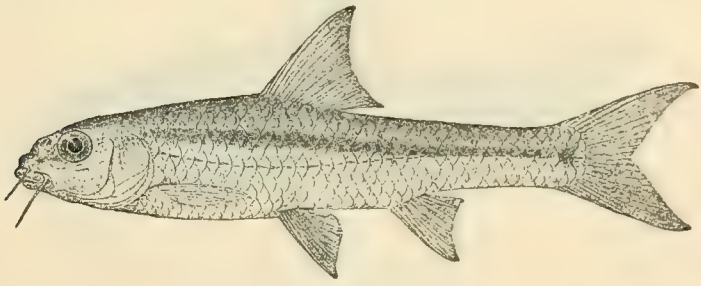
Distinguished from *B. inermis* by the smaller eye, longer barbels, and more numerous scales.

146 *c*. BARBUS MACRURUS.

Gilchrist & Thompson, t. c. p. 425, fig.

Depth of body $3\frac{3}{5}$ to $4\frac{3}{5}$ times in total length, length of head 4 to $4\frac{1}{2}$ times. Snout rounded, as long as eye, which is $3\frac{1}{4}$ to $3\frac{2}{3}$ times in length of head; interorbital width 3 to $3\frac{2}{3}$ times in length of head; mouth subinferior, its width 3 to 4 times in length of head; lips

Fig. 161.



Barbus macrurus.
Type (Ann. S. Afr. Mus.). $\frac{3}{2}$.

moderate; two barbels on each side, anterior $\frac{2}{3}$ to 1 diameter of eye, posterior 1 to $1\frac{2}{5}$. Dorsal III 8, equally distant from nostrils or middle of eye and from root of caudal, border slightly concave; last simple ray not enlarged, flexible, 1 to $1\frac{1}{4}$ times length of head. Anal III 5, not reaching caudal. Pectoral $\frac{2}{3}$ to $\frac{4}{5}$ length of head, not reaching ventral; base of latter behind anterior rays of dorsal. Caudal peduncle 2 to $2\frac{1}{2}$ times as long as deep. Scales radiately striated, 33–36 $\frac{5\frac{1}{2}}{5\frac{1}{2}}$, 3–$3\frac{1}{2}$ between lateral line and ventral, 14–16 round caudal peduncle. Yellowish brown, darker above than below; a dark lateral streak from

preopercular border to root of caudal where it ends in a small dark spot; extremity of dorsal fin blackish.

Total length 74 millim.

Dwaars River, Transvaal.—Types in S. African Museum, Cape Town.

Perhaps not specifically distinct from the preceding.

148. BARBUS NIGERIENSIS, Blgr.

Add:—

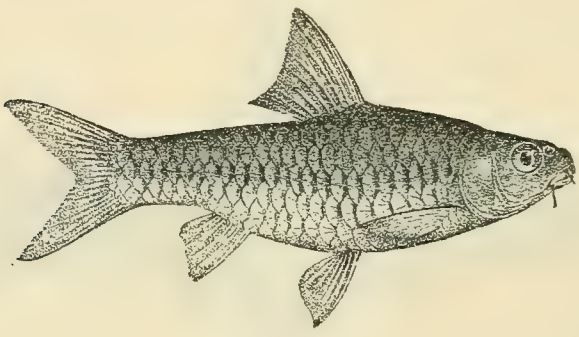
11–18. Ad.	Udi, Lower Niger.	Major G. E. Bruce (C.).
19–20. Ad.	Oji R., „	„

151 *a*. BARBUS SPURRELLI.

Bouleng. Proc. Zool. Soc. 1913, p. 51, pl. iii. fig. 1.

Depth of body 3 to $3\frac{1}{2}$ times in total length, length of head $3\frac{1}{2}$ to $3\frac{2}{3}$ times. Snout rounded, as long as eye, $3\frac{1}{3}$ to $3\frac{1}{2}$ times in length of head, interorbital width $2\frac{3}{4}$ to 3 times; mouth subinferior; lips

Fig. 162.



Barbus spurrelli.
Type (P. Z. S. 1913).

moderately developed; two barbels on each side, posterior as long as eye and twice as long as anterior. Dorsal III 8, equally distant from centre or anterior border of eye and from root of caudal, border feebly concave; last simple ray not enlarged, as long as head. Anal III 5, not reaching caudal. Pectoral $\frac{4}{5}$ length of head, reaching ventral; base of latter below anterior rays of dorsal. Caudal peduncle 1 to $1\frac{1}{3}$ times as long as deep. Scales radiately striated, 24–26 $\frac{3\frac{1}{2}}{3\frac{1}{2}}$, 2 between lateral line and ventral, 10 or 12 round caudal peduncle. Greenish silvery, darker on the back, the scales dark-edged or with a dark base; this

dark base often more marked on the scales of the lateral line, which may be further obscured by black dots, forming an ill-defined dark lateral band; fins greyish.

Total length 75 millim.

Gold Coast, Sierra Leone.

1–6. Types.	Near Dunkwa, Gold Coast.	Dr. H. G. F. Spurrell (P.).
7–9. Types.	R. Paramie, „	„
10–11. Ad.	N. Sherbo District, Sierra Leone.	N. W. Thomas, Esq. (P.).

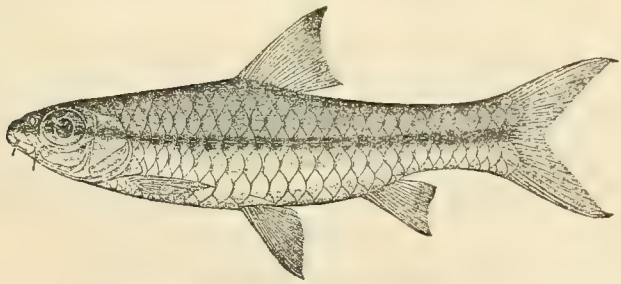
Very closely allied to *B. ablabes.*

151 *b.* BARBUS MACROPS.

Bouleng. Ann. & Mag. N. H. (8) vii. 1911, p. 374.

Depth of body equal to length of head, $3\frac{1}{3}$ to $3\frac{1}{2}$ times in total length. Snout rounded, much shorter than eye, which is $2\frac{1}{2}$ to $2\frac{2}{3}$ times in length of head; interorbital width $2\frac{2}{3}$ to 3 times in length of head; mouth subinferior; lips moderately developed; two barbels on each side, anterior $\frac{1}{3}$ diameter of eye, posterior $\frac{1}{2}$.

Fig. 163.



Barbus macrops.
Type.

Dorsal III 8, equally distant from centre of eye and from base of caudal, border feebly concave; last simple ray not enlarged, as long as head. Anal III 5, not reaching caudal. Pectoral $\frac{3}{4}$ to $\frac{4}{5}$ length of head, not quite reaching ventral; base of latter below anterior rays of dorsal. Caudal peduncle $1\frac{1}{3}$ to $1\frac{1}{2}$ times as long as deep. Scales radiately striated, 23–25 $\frac{3\frac{1}{2}}{3\frac{1}{2}}$, 2–$2\frac{1}{2}$ between lateral line and ventral, 12 round caudal peduncle. Yellow above, silvery beneath, scales on back and sides finely speckled with brown, with a more or less distinct dark brown spot at the base; a black straight lateral band from the

end of the snout, through the eye, to the base of the caudal; fins yellow, dorsal and caudal orange at the base; a blackish spot at the end of the longest rays of the dorsal.

Total length 65 millim.

Portuguese Guinea.

1–10. Types.	Culufi R. at Bafata.	Dr. W. J. Ansorge (C.).
11–16. Types.	Geba R. above Bafata.	,,
17–18. Types.	Crobal R. above rapids.	,,

Distinguished from *B. ablabes* and *B. spurrelli* by the larger eye.

153. BARBUS UNITÆNIATUS, Gthr.

Gilchrist & Thompson, Ann. S. Afr. Mus. xi. 1913, p. 422.

Add:—

14–19. Ad. & hgr.	Lucalla R. at Lucalla, Angola.	Dr. W. J. Ansorge (C.).
20–21. Ad.	Lucalla R. at Kalanga, ,,	,,
22–23. Ad. & hgr.	Bengo R. at Kabiri, ,,	,,
24–25. Hgr.	L. Kilunda, Bengo R., ,,	,,
26–27. Yg.	Elisabethville, Katanga.	Congo Museum (P.).
28–31. Ad.	Msundusi R., Ubombo district, Zululand.	F. Toppin, Esq. (C.); Durban Museum (P.).

154. BARBUS LINEOMACULATUS, Blgr.

Gilchrist & Thompson, t. c. p. 420.

Add:—

5. Ad.	Solwezi R., N. Rhodesia.	F. H. Melland, Esq. (P.).

155. BARBUS INNOCENS, Pfeff.

Keilhack, Mitth. Zool. Mus. Berl. v. 1910, p. 108.

157*a*. BARBUS BARILIOIDES.

Bouleng. Ann. & Mag. N. H. (8) xiv. 1914, p. 386.

Depth of body equal to length of head, $3\frac{2}{3}$ times in total length. Snout rounded, shorter than eye, which is 3 times in length of head and equals interorbital width; mouth small, terminal; lips feebly developed; two barbels on each side, anterior as long as eye, posterior $1\frac{1}{2}$ diameters of eye. Dorsal III 8, equally distant from centre of eye and from caudal, border straight; last simple ray not enlarged, not serrated, nearly as long as head. Anal III 5, not reaching caudal.

Pectoral $\frac{3}{4}$ length of head, not quite reaching ventral; base of latter below anterior rays of dorsal. Caudal peduncle twice as long as deep. Scales radiately striated, 28–30 $\frac{4\frac{1}{2}}{4\frac{1}{2}}$, 2 between lateral line and ventral. Yellowish brown, darker on the back, with 12 to 16 narrow vertical bars on the sides, the second or third and the last expanding into a spot; belly white; basal half of vertical fins orange; eye red.

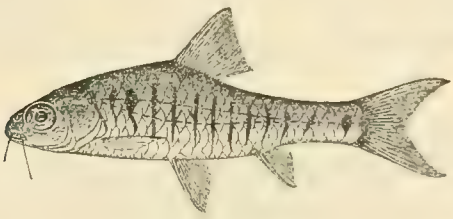
Total length 53 millim.

Solwezi River, tributary of Chifulowa R., Zambesi.

1–2. Types. Solwezi R., N. Rhodesia. F. H. Melland, Esq. (P.).

Distinguished from *B. fasciolatus* by smaller scales.

Fig. 164.



Barbus barilioides.
Type.

159. BARBUS TRISPILUS, Blkr.

Add:—

18–27. Ad.	Omalu, Aboina R., Cross R.	Major G. E. Bruce (P.).
28–30. Ad.	Tano R., Gold Coast.	Dr. H. G. F. Spurrell (P.).
31–34. Ad.	Near Dunkwa, Gold Coast.	„
35–37. Ad.	Sapelle, Niger Delta.	Mr. J. Paul Arnold (P.).

159 *a*. BARBUS TETRASTIGMA.

Bouleng. Rev. Zool. Afr. ii. 1913, p. 158.

Depth of body 3 to $3\frac{1}{3}$ times in total length, length of head $3\frac{2}{3}$ to 4 times. Snout rounded, as long as eye, which is $3\frac{1}{2}$ to $3\frac{2}{3}$ in length of head and $1\frac{1}{2}$ times in interorbital width; mouth small, terminal; lips feebly developed; two barbels on each side, anterior as long as eye, posterior $1\frac{1}{2}$ diameters of eye. Dorsal III 7–8, equally distant from eye and from caudal, border feebly concave; last simple ray flexible, as long as head. Anal III 5, not reaching caudal. Pectoral $\frac{3}{4}$ length of head, not reaching ventral; latter inserted below anterior third of

dorsal. Caudal peduncle a little longer than deep. Scales radiately striated, 26–28 $\frac{4\frac{1}{2}}{4\frac{1}{2}}$, $2\frac{1}{2}$–3 between lateral line and ventral, 12 round caudal peduncle. Yellowish; four round black spots on each side, the first two above lateral line, the others on latter.

Total length 58 millim.

Uelle, Upper Congo.—Types in Congo Museum, Tervueren.

1–2. Two of the types. Dungu, Uelle. Capt. Hutereau (C.).

Closely allied to *B. trispilus*; barbels shorter and four black spots on each side instead of three.

163. BARBUS CALLIPTERUS, Blgr.

Add :—

20. Ad. Deert, mouth of Gurara R., Niger. J. J. Simpson, Esq. (P.).
21–22. Ad. Lower Niger. Mr. J. Paul Arnold (P.).

163 *a*. BARBUS ABOINENSIS.

Bouleng. Ann. & Mag. N. H. (8) viii. 1911, p. 369.

Depth of body 3 to $3\frac{1}{3}$ times in total length, length of head $3\frac{1}{3}$ to $3\frac{1}{2}$ times. Snout rounded, as long as eye, which is $3\frac{1}{3}$ to $3\frac{1}{2}$ times in length of head; interorbital width $2\frac{2}{3}$ to 3 times in length of head; mouth subinferior, small; lips moderate; two barbels on each side, anterior a little shorter than eye, posterior as long as or a little longer than eye. Dorsal III 8, equally distant from centre or posterior border of eye and from caudal, border slightly concave; last simple ray not enlarged, not serrated, a little shorter than head. Anal III 5, not reaching caudal. Pectoral $\frac{3}{4}$ length of head, not reaching ventral; base of latter below anterior rays of dorsal. Caudal peduncle $1\frac{1}{2}$ times as long as deep. Scales radiately striated, 23–25 $\frac{2\frac{1}{2}}{3\frac{1}{2}}$, 2–$2\frac{1}{2}$ between lateral line and ventral, 12 round caudal peduncle. Brown above, yellow beneath, with a blackish lateral streak and a round black spot at the base of the caudal fin; dorsal, anal, and ventrals orange; a black spot usually present in the upper part of the anterior half of the dorsal.

Total length 80 millim.

Aboina River, Cross River, Southern Nigeria.

1–18. Types. Omalu, headwaters of Aboina R. Major G. E. Bruce (P.).

Distinguished from *B. callipterus* by the smaller eye.

165. BARBUS ARCISLONGÆ, Keilh.

Barbus trispilopleura, var. *arcislongæ*, Keilhack, Mitth. Zool. Mus. Berl. v. 1910, p. 108, fig. 8.

166. BARBUS VIVIPARUS, M. Web.

Gilchrist & Thompson, Ann. S. Afr. Mus. xi. 1913, p. 421.

Recorded from the Sabi R., Transvaal, and from Livingstone, Upper Zambesi.

167. BARBUS PERINCE, Rüpp.

Pappenh. in Schubotz, Wiss. Ergebn. Deutsch. Z.-Afr. Exped., Zool. iii. p. 244 (1914).

Recorded from Lake Albert Edward.

Add :—

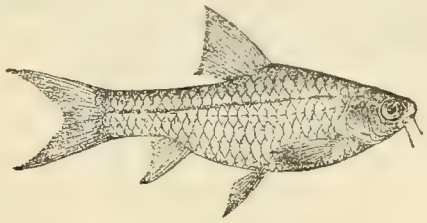
84. Ad. Nyonki, 6 miles S. of Gondokoro, 2070 f. Sir F. J. Jackson (P.).

168. BARBUS TRISPILOPLEURA, Blgr.

Pellegr. Mém. Soc. Zool. France, xxii. 1910, p. 286.

Recorded from Kavirondo Bay, L. Victoria.

Fig. 165.



Barbus mimus.
Type (P. Z. S. 1912).

169 *a*. BARBUS MIMUS.

Bouleng. Proc. Zool. Soc. 1912, p. 674, pl. lxxix. fig. 2.

Depth of body $2\frac{1}{2}$ to $2\frac{3}{4}$ times in total length, length of head $3\frac{1}{2}$ to 4 times. Snout rounded, much shorter than the eye, which is $2\frac{1}{2}$ to 3 times in length of head and equals interorbital width ; mouth small, subinferior ; lips feebly developed ; two barbels on each side, anterior about $\frac{2}{3}$ diameter of eye, posterior a little longer than eye. Dorsal III 8, equally distant from posterior border or centre of eye and from base of caudal, border feebly concave ; last simple ray not enlarged, not

serrated, as long as or a little longer than head. Anal III 5, not reaching caudal. Pectoral as long as head, not quite reaching ventral; base of latter below origin of dorsal. Caudal peduncle as long as deep or a little longer than deep. Scales radiately striated, 25–26 $\frac{3\frac{1}{2}}{3\frac{1}{2}}$, 2–2$\frac{1}{2}$ between lateral line and ventral, 12 round caudal peduncle. Pale sand-colour, with a silvery lateral band, which is sometimes edged above with a streak of black pigment; fins white and transparent, or pale orange at the base.

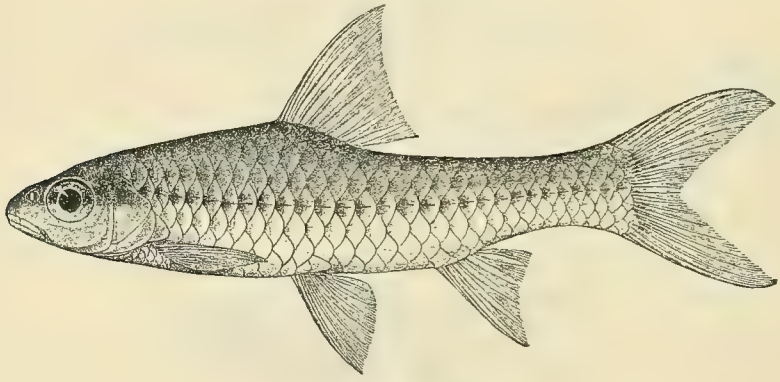
Total length 55 millim.

Eusso Nyiro, British East Africa.

1–10. Types. Eusso Nyiro, below falls. A. B. Percival, Esq. (P.).

Closely allied to *B. neglectus*, and strikingly resembling *B. argyrotænia* in general appearance, although pertaining to a different section of the genus.

Fig. 166.



Barbus aurantiacus.
Type.

170*a*. BARBUS AURANTIACUS.

Bouleng. Ann. & Mag. N. H. (8) vi. 1910, p. 554.

Depth of body equal to length of head, 3$\frac{2}{3}$ to 4 times in total length. Snout rounded, shorter than eye, which is 2$\frac{2}{3}$ to 2$\frac{3}{4}$ times in length of head and equals interorbital width; mouth subinferior, its width 3$\frac{1}{2}$ times in length of head; lips moderately developed, interrupted on the chin; two minute barbels on each side. Dorsal III 8, equally distant from end of snout or anterior border of eye and from root of caudal, border slightly concave; last simple ray flexible, not enlarged, not serrated, as long as head. Anal III 5, not reaching caudal.

Pectoral $\frac{3}{4}$ to $\frac{4}{5}$ length of head, not reaching ventral; base of latter below anterior rays of dorsal. Caudal peduncle $1\frac{2}{3}$ to 2 times as long as deep. Scales radiately striated, 26–28 $\frac{3\frac{1}{2}}{3\frac{1}{2}}$, 2–$2\frac{1}{2}$ between lateral line and ventral, 12 round caudal peduncle. Pale olive-brown above, each scale with a dark brown spot; a blackish streak on each side of the head, passing through the eye, continued as a series of spots along the lateral line; lower parts yellowish, more or less tinged with orange; basal half or two-thirds of fins bright orange.

Total length 87 millim.

Angola.

1–3. Types.	Lucalla R. at Lucalla.	Dr. W. J. Ansorge (C.).

Distinguished from *B. doggetti* by the larger eye and fewer scales in the lateral line.

171 *a*. BARBUS MUSUMBI.

Boulenger, l. c.

Depth of body $2\frac{3}{4}$ to $3\frac{1}{4}$ times as long as deep, length of head 3 to $3\frac{2}{3}$ times. Snout rounded, shorter than eye, which is $2\frac{1}{2}$ to 3 times in length of head and equals interorbital width; mouth small, subinferior; lips feebly developed; two barbels on each side, posterior the longer and $\frac{1}{3}$ to $\frac{1}{2}$ diameter of eye; males with small nuptial tubercles on lips and sides of snout. Dorsal III 8, equally distant from eye and from root of caudal, border straight or slightly concave; last simple ray flexible, not enlarged, not serrated, as long as head. Anal III 5, not reaching caudal. Pectoral about $\frac{3}{4}$ length of head, not reaching ventral; latter below anterior rays of dorsal. Caudal peduncle $1\frac{1}{3}$ to $1\frac{1}{2}$ times as long as deep. Scales radiately striated, 22–25 $\frac{3\frac{1}{2}}{3\frac{1}{2}}$, $1\frac{1}{2}$ between lateral line and ventral, 8 round caudal peduncle. Yellowish or pale olive above, scales often edged with black; top of head sometimes black; a more or less distinct black or blackish bar behind the gill-opening; fins red or blackish.

Total length 48 millim.

Angola.

1–2. Types.	Quanza R. at Cambambe.	Dr. W. J. Ansorge (C.).
3–10. Types.	L. Kilunda, Bengo R.	,,
11–12. Types.	Bengo R. at Cabiri.	,,

Very closely allied to the larger *B. congicus*.

172. BARBUS PLEUROPHOLIS, Blgr.

Pappenh. in Schubotz, Wiss. Ergebn. Deutsch. Z.-Afr. Exped., Zool. iii. p. 245.

Recorded from the Aruwimi.

Add:—

2. Ad.	Dungu, Uelle.	Capt. Hutereau (C.).

174. BARBUS ANOPLUS, M. Web.

Gilchrist & Thompson, Ann. S. Afr. Mus. xi. 1913, p. 428.
Barbus karkensis, Gilchrist & Thompson, t. c. p. 430.

Add:—

40–43. Ad. & hgr.	Port Elizabeth.	H. A. Spencer, Esq (P.).

179. BARBUS ASPILUS, Blgr.

Add:—

7. Hgr.	Akonolinga, Nyong R.	G. L. Bates, Esq. (C.).

180. BARBUS ANEMA, Blgr.

Add:—

15. Hgr.	Nile near Cairo.	Mr. Andres (P.).

181. BARBUS TRISPILOMIMUS, Blgr.

Add:—

2–4. Ad.	Chiloango R. at Mayili.	Dr. W. J. Ansorge (C.).
5–9. Ad.	Luali R. (Chiloango) at Lundo.	,,
10. Ad.	Lebusi R. (Chiloango) at Kuka Muno.	,,
11. Ad.	Luculla R. (Chiloango).	,,

182. BARBUS SALESSII, Pellegr.

Add:—

2. Hgr.	Geba R. at Bafata, Portug. Guinea.	Dr. W. J. Ansorge (C.).

182 *a*. BARBUS APOGONOSTOMATUS.

Pellegr. Bull. Soc. Zool. France, xxxviii. 1913, p. 240.

Depth of body equal to length of head, $3\frac{1}{3}$ times in total length. Snout rounded, as long as eye, which is 4 times in length of head and equals interorbital width; mouth small, subinferior; lips feebly developed; no barbels. Dorsal III 7, originating at equal distance from end of snout and from root of caudal, border convex; last simple ray ossified only at the base, as long as head. Anal III 5, not reaching

caudal. Pectoral $\frac{2}{3}$ length of head, not reaching ventral; latter below origin of dorsal. Caudal peduncle $1\frac{3}{4}$ times as long as deep. Scales radiately striated, 27 $\frac{5\frac{1}{2}}{5\frac{1}{2}}$, 3 between lateral line and ventral, 12 round caudal peduncle; lateral line incomplete, on the first 10 scales. Brownish, with traces of a small black spot at the base of the caudal fin.

Total length 45 millim.

Kikulo R., French Guinea.—Type in Paris Museum.

Allied to *B. salessii*, but scales more numerous.

183 *a*. BARBUS LEONENSIS.

Bouleng. Ann. & Mag. N. H. (8) xv. 1915, p. 203.

Depth of body equal to length of head, $3\frac{1}{4}$ times in total length. Snout rounded, shorter than eye, which is 3 times in length of

Fig. 167.

Barbus leonensis.
Type. ×2.

head and a little less than interorbital width; mouth small, terminal, with feebly developed lips; no barbels. Dorsal III 7, equally distant from posterior border of eye and from caudal, border straight; last simple ray not enlarged, not serrated, slightly shorter than head. Anal III 5, not reaching caudal. Pectoral shorter than head, not reaching ventral; latter below origin of dorsal. Caudal forked. Caudal peduncle $1\frac{1}{3}$ times as long as deep. Scales radiately striated, 21–23 $\frac{4\frac{1}{2}}{3\frac{1}{2}}$, 2 between lateral line series and ventral, 8 round caudal peduncle; lateral line present only in front, reduced to 7 tubules. Yellow, with black dots on the borders of the dorsal scales; a black spot on the dorsal fin and another at the base of the caudal.

Total length 21 millim.

Sierra Leone.

1–2. Types. Maka. N. W. Thomas, Esq. (P.).

Closely allied to *B. jæ*.

183 *b*. BARBUS TOPPINI, sp. n.

Depth of body equal to or a little greater than length of head, $3\frac{1}{2}$ to $3\frac{3}{4}$ times in total length. Snout rounded, shorter than eye, which is $3\frac{1}{3}$ to $3\frac{1}{2}$ times in length of head and equals interorbital width; mouth small, terminal; lips feebly developed; no barbels. Dorsal III 8, equally distant from eye and from caudal, border feebly concave; last simple ray not enlarged, not serrated, nearly as long as head. Anal III 5, not reaching caudal. Pectoral a little shorter than head, not reaching ventral; base of latter below anterior rays of dorsal. Caudal peduncle twice as long as deep. Scales radiately striated, 27–28 $\frac{4\frac{1}{2}-5\frac{1}{2}}{2\frac{1}{2}-3\frac{1}{2}}$, $1\frac{1}{2}$ between lateral line series and ventral; lateral line reduced to 3 to 7 anterior tubules. Yellowish, with a black lateral line expanding into a small spot at the base of the caudal fin.

Total length 30 millim.

Zululand.—Types in Durban Museum.

1–5. Types.	Msundusi R., Ubombo district.	F. Toppin, Esq. (C.); Durban Museum (P.).

Distinguished from the species without barbels and with incomplete lateral line by the more numerous scales.

184. BARBUS STIGMATOPYGUS, Blgr.

Add :—

8. Ad.	Geba R. at Bafata, Portug. Guinea.	Dr. W. J. Ansorge (C.).
9–11. Ad.	Nile near Cairo.	Mr. Andres (P.).

185 *a*. BARBUS CARENS.

Bouleng. Ann. Mus. Congo, Zool. ii. 3, p. 15, pl. xxii. fig. 2 (1912).

Depth of body 3 to $3\frac{1}{2}$ times in total length, length of head $3\frac{1}{3}$ to 4 times. Snout rounded, shorter than eye, which is $2\frac{1}{2}$ to $2\frac{2}{3}$ times in length of head and equals interorbital width; mouth very small, subterminal; lips feebly developed; no barbels. Dorsal III 8, equally distant from centre of eye and from caudal, border straight; last simple ray flexible, nearly as long as head. Anal III 5, not reaching caudal. Pectoral about $\frac{3}{4}$ length of head, not reaching ventral; latter below anterior rays of dorsal. Caudal peduncle $1\frac{1}{3}$ to $1\frac{1}{2}$ times as long as deep. Scales with a few radiating striæ, 22–25 in longitudinal series, 7 in transverse series, 8 round caudal peduncle; no trace of a lateral line. Yellowish, scales

finely dotted with brown or edged with brown; a fine blackish line along each side of the body, often accompanied by a bright orange one; base of caudal bright orange.

Total length 35 millim.

Chiloango.

1–2. Types.	Chiloango R. at Mayili.	Dr. W. J. Ansorge (C.).
3–12. Types.	Luculla R.	,,
13–14. Types.	Luali R. at Lundo.	,,
15–16. Types.	Lebuzi R. at Kuka Muno.	,,

Combines the absence of barbels and of any trace of a lateral line.

Fig. 168.

Barbus carens.
Type (A. M. C.).

6. **LEUCISCUS**, Cuv.

1. LEUCISCUS CALLENSIS, Guichen.

Add:—

11–17. Ad.	Khenchela, Prov. Constantine.	Lord Rothschild (P.).

8. **BARILIUS**, Ham. Buch.

5. BARILIUS STEINDACHNERI, Pellegr.

Add:—

1–2. Yg.	N. Sherbo district, Sierra Leone.	N. W. Thomas, Esq. (P.).

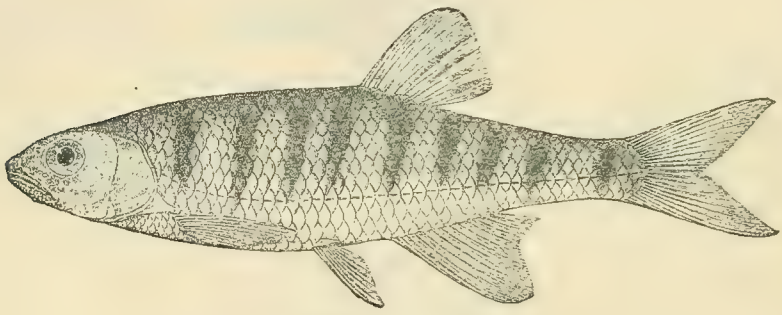
6 *a*. BARILIUS PERINGUEYI.

Gilchr. & Thomps. Ann. S. Afr. Mus. xi. 1913, p. 432, fig.

Depth of body $3\frac{3}{4}$ to $4\frac{1}{2}$ times in total length, length of head $3\frac{1}{2}$ to $3\frac{4}{5}$ times. Width of head about $\frac{1}{2}$ its length; snout $3\frac{1}{3}$ to $3\frac{3}{4}$ times in length of head, diameter of eye $3\frac{1}{4}$ to $3\frac{9}{10}$ times, interorbital width 3 to $3\frac{1}{3}$ times; mouth extending to vertical of anterior third or middle of eye; no barbels; suborbital bones nearly covering the cheek. Gill-rakers

few, rudimentary. In some specimens the lower jaw is covered underneath with more or less distinct scars or rows of conical tubercles and, in the largest specimen, there are about 8 pearl-like tubercles on each side of the upper jaw. Dorsal II 7–8, originating midway between middle of eye and root of caudal, posterior third or half above anal; anterior rays longest, $\frac{3}{5}$ to $\frac{4}{5}$ length of head. Anal III 11; anterior rays slightly longer than those of dorsal, $\frac{7}{10}$ to $\frac{9}{10}$ length of head. Pectoral $\frac{3}{4}$ to $\frac{4}{5}$ length of head, reaching or scarcely reaching ventral. Caudal deeply forked. Caudal peduncle $2\frac{2}{7}$ to $2\frac{3}{5}$ times as long as deep. Scales with radiating striæ, 41–42 $\frac{7\frac{1}{2}}{4\frac{1}{2}}$, $2\frac{1}{2}$ between lateral line and ventral, 14 round caudal peduncle. Silvery, darker on the back; 8 to 10 dark vertical bars on each side of the body and a dark patch on base of caudal;

Fig. 169.



Barilius peringueyi.
Type (Ann. S. Afr. Mus.).

membrane between rays of dorsal black, and last ray tipped with black.

Total length 80 millim.

Transvaal.—Types in S. African Museum, Cape Town.

1. One of the types.	Nels R., Nelspruit.	A. T. Cooke, Esq. (C.); S. African Museum (P.).

Distinguished from *B. zambesensis* by the lower number of dorsal rays and the dark bars on the sides.

8. BARILIUS NEAVII, Blgr.

Gilchr. & Thomps. t. c. p. 433.

Barilius stephensoni, Gilchr. & Thomps. t. c. p. 434, fig.

9. BARILIUS UBANGENSIS, Pellegr.

Steind. Anz. Ak. Wien, 1911, p. 534.

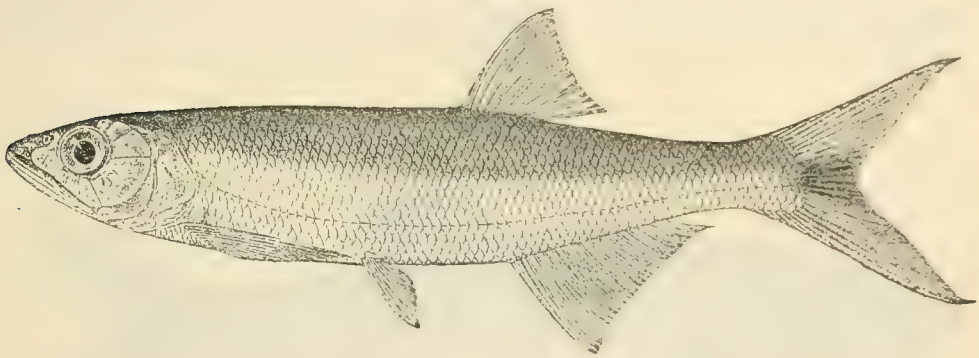
Barilius ubangensis, var. *chiloangæ*, Bouleng. Ann. Mus. Congo, Zool. ii. 3, p. 16, pl. xvii. fig. 5 (1912).

Barilius ubangiensis, forma *altus*, Pappenh. Mitth. Zool. Mus. Berl. v. 1911, p. 518.

Add :—

20–23. Ad. & hgr.	Luali R. (Chiloango) at Buco Zau.	Dr. W. J. Ansorge (C.).
24. Hgr.	Loango R. at N'Kutu.	„
25. Hgr.	Between Arebi and Aba, Uelle.	Capt. Hutereau (C.).
26–29. Ad. & hgr.	Lualaburg, Upper Congo.	Rev. P. Callewaert (C.).

Fig. 170.



Barilius batesii.
Type.

11 *a*. BARILIUS BATESII.

Bouleng. Ann. & Mag. N. H. (8) xiv. 1914, p. 384.

Depth of body 5 times in total length, length of head 4 times. Head $2\frac{1}{2}$ to $2\frac{2}{3}$ times as long as broad, with feebly curved upper profile; snout pointed, not projecting beyond mouth, as long as eye, which is $3\frac{2}{3}$ to $3\frac{3}{4}$ times in length of head; interorbital width $3\frac{1}{2}$ times in length of head; mouth extending to below posterior third of eye; no barbels; naked space between præoperculum and suborbitals not quite $\frac{1}{2}$ the width of third suborbital. Gill-rakers few, rudimentary. Dorsal III 7, originating midway between occiput and root of caudal, its posterior third or half above anal; anterior rays longest, $\frac{2}{3}$ length of head. Anal III 15; anterior rays much longer than posterior, about as long as longest dorsals. Pectoral acutely pointed, a little shorter than head,

not quite reaching ventral. Caudal forked. Caudal peduncle twice as long as deep. Scales with radiating striæ, 68–70 $\frac{12-12\frac{1}{2}}{7\frac{1}{2}}$, 3 between lateral line and ventral, 20–22 round caudal peduncle. Silvery; caudal fin orange, with the median rays blackish.

Total length 120 millim.

South Cameroon (Congo Basin).

1–2. Types. Ja R. G. L. Bates, Esq. (C.).

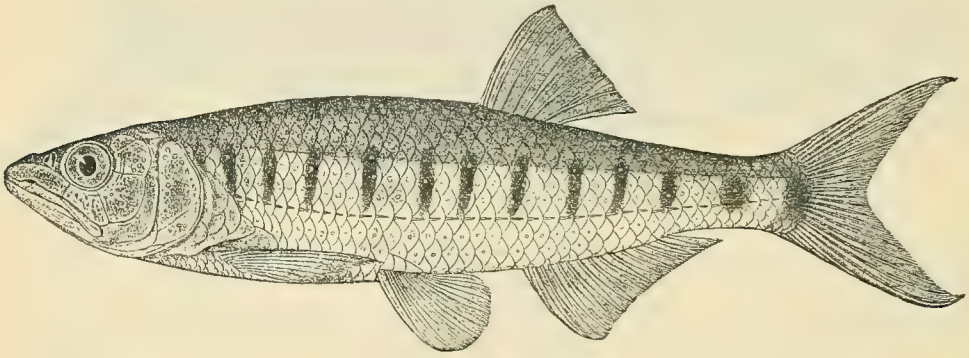
Distinguished from *B. kingsleyæ* by the much smaller scales.

11 *b*. BARILIUS ANSORGII.

Bouleng. Ann. & Mag.N. H. (8) vi. 1910, p. 555.

Depth of body equal to or a little less than length of head, $3\frac{2}{3}$ to $4\frac{1}{3}$ times in total length. Head 2 to $2\frac{1}{3}$ times as long as broad, with feebly curved upper profile; snout pointed, not projecting beyond mouth, as long as or a little longer than eye, which is $3\frac{1}{2}$ to 4 times in length

Fig. 171.



Barilius ansorgii.
Type.

of head; interorbital width 3 to $3\frac{1}{2}$ times in length of head; mouth extending to below centre or posterior third of eye; no barbels; naked space between præoperculum and suborbitals not $\frac{1}{2}$ width of third suborbital. Gill-rakers few, rudimentary. Dorsal II 7, originating midway between occiput and root of caudal, its posterior half above anal; anterior rays longest, $\frac{3}{5}$ to $\frac{2}{3}$ length of head. Anal III 12–14 (usually 13), anterior rays much longer than posterior, about as long as longest dorsals. Pectoral acutely pointed, as long as or a little shorter than head, reaching ventral or not. Caudal forked. Caudal peduncle $1\frac{2}{3}$ to 2 times as long as deep. Scales radiately striated, 40–44 $\frac{7\frac{1}{2}-8\frac{1}{2}}{4\frac{1}{2}-5\frac{1}{2}}$,

2–2½ between lateral line and ventral, 12–14 round caudal peduncle. Back bluish grey, sides and lower parts silvery white in females, bright yellow in males; 10 to 15 bluish-black vertical bars on each side, above the lateral line, the last usually expanding into a large blotch on the caudal peduncle at root of caudal; fins white.

Total length 120 millim.

Angola.

1–6. Types. Quanza R. at Dondo. Dr. W. J. Ansorge (C.).

Allied to *B. kingsleyæ*, but body less elongate, anal rays fewer, and scales fewer.

12. BARILIUS LOATI, Blgr.

? Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 27.

Add:—

28. Ad. Niger above junction with Benue. A. C. Francis, Esq. (P.).

Fig. 172.

Barilius macrostoma.
Type (P. Z. S. 1913). $\frac{5}{7}$.

12*a*. BARILIUS MACROSTOMA.

Boulenger. Proc. Zool. Soc. 1913, p. 51, pl. iii. fig. 2.

Depth of body equal to length of head, 3⅔ times in total length. Head 2½ times as long as broad; snout pointed, projecting beyond mouth, 1⅖ times as long as eye, which is 4½ times in length of head, 1½ times in interorbital width; mouth extending nearly to below posterior border of eye; no barbels; second suborbital deep, extending posteriorly to vertical of posterior border of eye; naked space between præoperculum and suborbital about ¼ diameter of eye. Gill-rakers few and very

rudimentary. Dorsal III 8, originating at equal distance from occiput and from root of caudal, posterior third of its base above anal; anterior rays longest, a little less than $\frac{2}{3}$ length of head. Anal III 14, notched, anterior lobe rounded. Pectoral pointed, $\frac{2}{3}$ length of head, not reaching ventral, which is much shorter and reaches vent. Caudal crescentic when fully spread out. Caudal peduncle $1\frac{3}{4}$ times as long as deep. Scales with radiating striæ, 52 $\frac{11\frac{1}{2}}{6\frac{1}{2}}$, 3 between lateral line and ventral, 16 round caudal peduncle. Silvery, with 13 or 14 dark bars on the side of the body above the lateral line; dorsal fin greyish, anal reddish, caudal red with a black edge.

Total length 155 millim.

Gold Coast.

1. Type. Tano R. Dr. H. G. F. Spurrell (P.).

Intermediate between *B. loati* and *B. senegalensis*.

15. BARILIUS MOORII, Blgr.

Pappenh. in Schubotz, Wiss. Ergebn. Deutsch. Z.-Afr. Exped., Zoo.. iii. p. 245 (1914).

Recorded from Lake Kivu.

9. **ENGRAULICYPRIS**, Gthr.

2. ENGRAULICYPRIS BREVIANALIS, Blgr.

Gilchr. & Thomps. Ann. S. Afr. Mus. xi. 1913, p. 436.

Add:—

5–7. Ad. Msundusi R., Ubombo district, Zululand. F. Toppin, Esq. (C.); Durban Museum (P.).

10. **CHELÆTHIOPS**, Blgr.

1. CHELÆTHIOPS BIBIE, Joann.

Add:—

145–147. Ad. & hgr. Khor Barboy, White Nile. J. H. King, Esq. (P.).

2. CHELÆTHIOPS ELONGATUS, Blgr.

Pappenh. in Schubotz, Wiss. Ergebn. Deutsch. Z.-Afr. Exped., Zool. iii. p. 245 (1914).

Recorded from the Ituri.

Add:—

6–7. Ad. Dungu, Uelle. Capt. Hutereau (C.).

Fam. SILURIDÆ.

1. **CLARIAS**, Gron.

1. CLARIAS ANGUILLARIS, L.

Pellegr. Poiss. Bass. Tchad, p. 89, pl. ix. fig. 1 (1914).

2. CLARIAS GARIEPINUS, Burch.

Gilchr. & Thomps. Ann. S. Afr. Mus. xi. 1913, p. 439.

Add :—

30–31. Ad.	L. Bangwelu.	F. H. Melland, Esq. (P.).
32. Hgr.	L. Rukwa.	,,
33. Ad.	L. Kilunda, Bengo R., Angola.	Dr. W. J. Ansorge (C.).
34–35. Ad.	Bengo R. at Quifangondo, Angola.	,,

4. CLARIAS SENEGALENSIS, C. & V.

Add :—

15. Yg.	Corbal R. at Tchitote, Portug. Guinea.	Dr. W. J. Ansorge (C.).

5. CLARIAS MOSSAMBICUS, Peters.

Gilchr. & Thomps. Ann. S. Afr. Mus. xi. 1913, p. 441.

Add :—

40. Hgr.	Mpologoma R., Uganda.	Dr. E. Bayon (C.) ; Genoa Museum (P.).
41. Ad.	Victoria Nile between L. Kioja and Murchison Falls.	F. H. Melland, Esq. (P.).

7. CLARIAS LAZERA, C. & V.

Pellegr. Poiss. Bass. Tchad, p. 90, fig. (1914).

Add :—

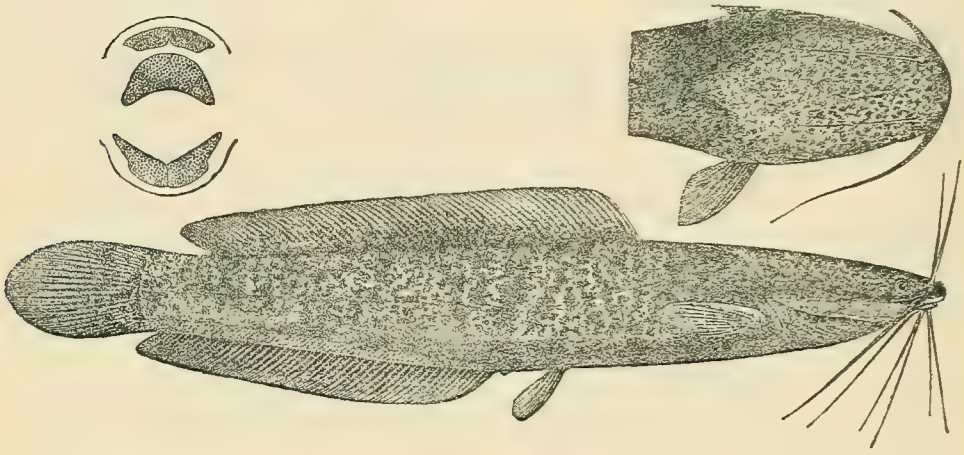
111–113. Ad. & yg.	Eusso Nyiro, near Lorian Swamp, Brit. E. Africa.	A. B. Percival, Esq. (P.).
114–115. Ad. & yg.	Lebusi R. (Chiloango) at Kuka Muno.	Dr. W. J. Ansorge (C.).
116. Yg.	R. Molo, L. Baringo.	Sir F. J. Jackson (P.).

7 *a*. CLARIAS NGAMENSIS.

Casteln. Mém. Poiss. Afr. Austr. p. 63 (1861) ; Bouleng. Tr. Zool. Soc. xviii. 1911, p. 404, pl. xxxviii. fig. 2 ; Gilchr. & Thomps. Ann. S. Afr. Mus. xi. 1913, p. 443.

Depth of body $6\frac{1}{3}$ times in total length, length of head 3 times. Head $1\frac{3}{4}$ times as long as broad, smooth above (young); occipital process angular ; frontal fontanelle $\frac{1}{3}$ length of head; occipital fontanelle small, in advance of occipital process ; eye 3 times in length of snout, 5 times in interorbital width, which equals width of mouth and $\frac{2}{3}$ length

Fig. 173.



Clarias ngamensis.
Okovango R. (Tr. Z. S. 1911). $\frac{1}{2}$.

of head ; band of præmaxillary teeth 4 times as long as broad ; vomerine teeth granular, forming a crescentic band which, in the middle, is nearly twice as broad as the præmaxillary band ; anterior mandibular teeth pointed, posterior granular. Nasal barbel $\frac{1}{2}$ length of head, maxillary $\frac{3}{4}$, reaching middle of pectoral spine, outer mandibular $\frac{2}{3}$, inner mandibular $\frac{1}{2}$. Gill-rakers long, about 30 on anterior arch. Clavicles striated, distinct under the thin skin. Dorsal 60, its distance from occipital process $\frac{1}{5}$ length of head, its distance from caudal fin $\frac{1}{4}$. Anal 50, narrowly separated from caudal. Pectoral not quite $\frac{1}{2}$ length of head, its spine serrated on the outer border and $\frac{2}{3}$ the length of the fin. Ventral equally distant from end of snout and

from caudal. Caudal fin $\frac{1}{2}$ length of head. Olive, marbled with darker, belly white.

Total length 245 millim.

L. Ngami Basin, N.W. Rhodesia *.

1. Hgr.	Okovango R., L. Ngami.	R. B. Woosnam, Esq. (C.).
2–3. Yg.	Umsitu R., Broken Hill, N.W. Rhodesia.	Rev. F. A. Rogers and E. C. Chubb, Esq. (P.).

Very similar to *C. mellandi*. Differing in the shape of the patch of vomerine teeth.

8. CLARIAS MELLANDI, Blgr.

Add :—

2. Ad.	L. Bangwelu.	F. H. Melland, Esq. (P.).

10. CLARIAS CAPENSIS, C. & V.

Gilchr. & Thomps. t. c. p. 444.

Recorded from German S.W. Africa.

12. CLARIAS JAENSIS, Blgr.

Add :—

7–8, 9–11. Ad.	Akonolinga, Nyong R., S. Cameroon.	G. L. Bates, Esq. (C.).

13. CLARIAS CARSONII, Blgr.

Add :—

29–32. Ad.	Hima R., E. foot-hills of Ruwenzori, 3500 ft.	Sir F. J. Jackson (P.).

15. CLARIAS SUBMARGINATUS, Peters.

Pappenh. in Schubotz, Wiss. Ergebn. Deutsch. Z.-Afr. Exped., Zool. iii. p. 246.

Recorded from Ruanda, L. Kivu, and the Upper Ituri.

16. CLARIAS LIOCEPHALUS, Blgr.

Add :—

4. Ad.	Dungu, Uelle.	Capt. Hutereau (C.).

This species may prove to be identical with the preceding.

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* The young specimens from Dongwenna, Mossamedes, referred by me with doubt to *C. mellandi*, probably belong to this species.

17. CLARIAS BREVICEPS, Blgr.

Add :—

2. Ad.	Luali R. at Lundo.	Dr. W. J. Ansorge (C.).

18. CLARIAS WALKERI, Gthr.

Pappenh. Mitth. Zool. Mus. Berl. v. 1911, p. 518.

20. CLARIAS ANGOLENSIS, Stdr.

? *Clarias monkei*, Keilhack, Mitth. Zool. Mus. Berl. v. 1910, p. 119.

Add :—

23. Ad.	Abogaji, Aboina R., Cross R.	Major G. E. Bruce (P.).
24. Hgr.	Lower Niger.	Mr. J. Paul Arnold (P.).
25–28. Ad. & yg.	Luali R. (Chiloango) at Lundo.	Dr. W. J. Ansorge (C.).
29–30. Hgr.	Cross R.	Major W. A. C. Cockburn (P.).
31. Ad.	Povo Grande, Cabinda.	Dr. W. J. Ansorge (C.).

21. CLARIAS BYTHIPOGON, Sauv.

Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 28.

Add :—

12. Yg.	Sankuru R. at Kondue, Kasai.	M. E. Luja (C.) ; Luxemburg Museum (P.).

23. CLARIAS WERNERI, Blgr.

Add :—

14–19. Yg.	L. Gangu, W. of L. Victoria.	C. M. Woodhouse, Esq. (P.).

23 *a*. CLARIAS OXYCEPHALUS.

Bouleng. Ann. & Mag. N. H. (8) xii. 1913, p. 68.

Depth of body 6 times in total length, length of head $4\frac{2}{3}$ times. Head nearly $1\frac{1}{2}$ times as long as broad, tapering in front, snout obtusely pointed, upper surface smooth ; occipital process angular, as long as broad ; frontal fontanelle twice as long as broad, larger than the occipital fontanelle, which is anterior to the occipital process ; eye 3 times in length of snout, $5\frac{1}{2}$ in interorbital width, which exceeds width of mouth and is $\frac{2}{5}$ length of head ; band of præmaxillary teeth $3\frac{1}{2}$ times as long as broad ; vomerine teeth conical, forming a crescentic band which, in the

middle, is a little broader than the præmaxillary band. Nasal barbel nearly as long as head; maxillary barbel $1\frac{2}{5}$ times as long as head, reaching beyond pectoral; inner mandibular barbel $\frac{5}{6}$ length of head, outer $1\frac{1}{4}$. Gill-rakers thick, 16 in number. Clavicles striated, covered with a thin skin. Dorsal 100, its distance from occipital process $\frac{1}{3}$ length of head, very narrowly separated from caudal. Anal 75, very narrowly separated from caudal. Pectoral $\frac{1}{2}$ length of head, the spine

Fig. 174.

Clarias oxycephalus.
Type.

serrated on both sides and $\frac{5}{7}$ the length of the fin. Ventral $1\frac{3}{5}$ times as distant from caudal as from end of snout. Caudal $\frac{1}{2}$ length of head. Uniform olive.

Total length 225 millim.

South Cameroon.

1. Type. Nyong R. G. L. Bates, Esq. (C.).

Differs from *C. werneri* principally in the more pointed snout.

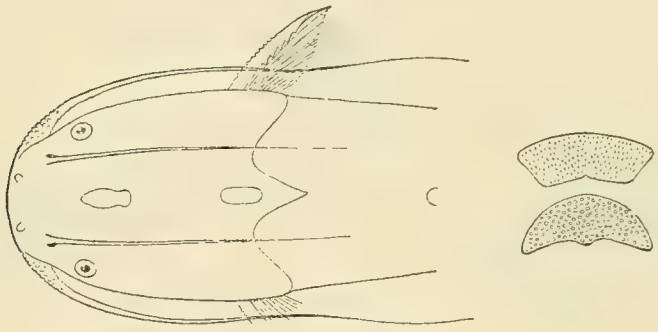
24 *a*. CLARIAS ESAMESÆ.

Bouleng. Ann. & Mag. N. H. (8) viii. 1911, p. 372.

Depth of body 7 times in total length, length of head 5 times. Head $1\frac{2}{5}$ times as long as broad, smooth above; occipital process angular; frontal fontanelle twice as long as broad; occipital fontanelle smaller, partly on occipital process; eye 3 times in length of snout, $5\frac{1}{2}$ times in interorbital width; band of præmaxillary teeth barely 3 times as long as broad; vomerine teeth granular, forming a large fan-shaped patch,

the longitudinal diameter of which a little exceeds the width of the præmaxillary band. Nasal barbel a little longer than head; maxillary barbel $1\frac{1}{2}$ length of head; outer mandibular barbel as long as nasal, inner shorter; maxillary and mandibular barbels papillose at the base. 14 gill-rakers on first arch. Clavicles exposed, striated. Dorsal 85, its distance from occipital process $\frac{2}{5}$ length of head. Anal 73. Dorsal and anal extending to root of caudal. Pectoral $\frac{1}{2}$ length of head, the

Fig. 175.



Clarias esamesæ.
Type. $\frac{4}{3}$.

spine serrated on both sides. Ventral $1\frac{1}{2}$ times as distant from caudal as from end of snout. Caudal $\frac{1}{2}$ length of head. Dark brown.

Total length 160 millim.

South Cameroon.

1. Type.	Ja R. at Esamesa.	G. L. Bates, Esq. (C.).

Closely allied to *C. macromystax*.

25. CLARIAS DUMERILII, Stdr.

Add:—

8. Ad.	Boma, Lower Congo.	Mr. J. Paul Arnold (P.).
9–10. Ad.	Bifoli, „	M. E. Luja (C.); Luxemburg Museum (P.).

26. CLARIAS LIBERIENSIS, Stdr.

Add:—

7–8. Yg.	Tano R., Gold Coast.	Dr. H. G. F. Spurrell (P.).
9–11. Ad. & hgr.	Maka, Sierra Leone.	N. W. Thomas, Esq. (P.).
12. Yg.	N. Sherbo district, Sierra Leone.	„

27. CLARIAS PACHYNEMA, Blgr.

Add :—

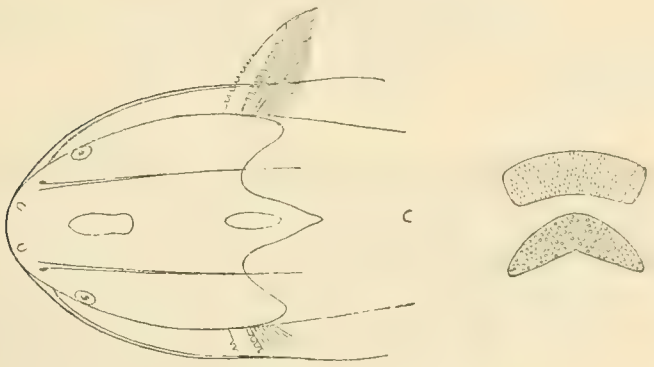
13–14. Ad.	Akonolinga, Nyong R.	G. L. Bates, Esq. (C.).

28. CLARIAS LÆVICEPS, Gill.

Add :—

9. Ad.	Corbal R. at Tchitoti, Portug. Guinea.	Dr. W. J. Ansorge (C.).
10–11, 12. Ad.	Tano R., Gold Coast.	Dr. H. G. F. Spurrell (P.).
13. Ad.	Ja R., S. Cameroon.	G. L. Bates, Esq. (C.).

Fig. 176.



Clarias hilgendorfi.
Type. $\frac{2}{1}$.

28*a*. CLARIAS HILGENDORFI.

Bouleng. Ann. & Mag. N. H. (8) viii. 1911, p. 54.

Depth of body $6\frac{1}{2}$ times in total length, length of head $4\frac{2}{3}$ times. Head $1\frac{2}{5}$ times as long as broad, smooth; occipital process longer than broad, acutely pointed; frontal fontanelle sole-shaped, $2\frac{1}{2}$ times as long as broad; occipital fontanelle narrow, elongate, partly on occipital process; eye very small, 3 times in length of snout, 6 times in interorbital width, which is a little less than $\frac{1}{2}$ length of head; band of præmaxillary teeth not quite 4 times as long as broad; vomerine teeth granular, forming a curved band which is nearly as broad as the præmaxillary band; nasal barbel $\frac{4}{5}$ length of head, maxillary $1\frac{1}{4}$, outer mandibular nearly 1, inner mandibular $\frac{2}{3}$. Gill-rakers few, 12 on first

arch. Clavicles concealed under the skin. Dorsal 73, its distance from occipital process $\frac{1}{4}$ length of head. Anal 62. Dorsal and anal extending almost to the very root of caudal. Pectoral not quite $\frac{1}{2}$ length of head, spine short, strongly serrated on both sides. Ventrals very small, $1\frac{2}{3}$ times as far from caudal as from end of snout. Caudal $\frac{1}{2}$ length of head. Uniform blackish brown; caudal with a narrow light edge.

Total length 130 mm.

Lake Rukwa.

1. Type. L. Rukwa. F. H. Melland, Esq. (P.).

Distinguished from *C. læviceps* by the granular vomerine teeth, fewer gill-rakers, fewer dorsal and anal rays, and a longer and narrower occipital process.

31. CLARIAS THEODORÆ, M. Web.

Bouleng. Tr. Zool. Soc. xviii. 1911, p. 405; Gilchr. & Thomps. Ann. S. Afr. Mus. xi. 1913, p. 445.

Add:—

2–3. Ad. & hgr. Okovango R., L. Ngami. R. B. Woosnam, Esq. (C.).

32. CLARIAS FOULONI, Blgr.

Add:—

2. Ad. L. Bangwelu. F. H. Melland, Esq. (P.).

33. CLARIAS SALÆ, Hubr.

Add:—

3–4. Ad. & hgr. Nanna Kru, Liberia. W. P. Lowe, Esq. (C.).
5. Skel. „ „ „

2. ALLABENCHELYS, Blgr.

2. ALLABENCHELYS LONGICAUDA, Blgr.

Add:—

9. Ad. Ja R. at Esamesa. G. L. Bates, Esq. (C.).

2 *a*. ALLABENCHELYS LATICEPS.

Steind. Anz. Ak. Wien, 1911, p. 532.

Depth of body $8\frac{3}{8}$ to 9 times in total length, length of head 5 to $5\frac{2}{3}$ times. Head $1\frac{1}{8}$ to $1\frac{1}{6}$ times as long as broad; eye 11 to 12 times in length of head, interorbital width nearly 2 times; band of præmaxillary

teeth a little more than 4 times as long as broad, as broad as vomerine band; nasal barbel $1\frac{1}{3}$ to $1\frac{3}{5}$ times as long as head; maxillary barbel longer than head. Dorsal 74–81, its distance from occipital process a little more than $\frac{1}{2}$ length of head. Anal 61. Pectoral nearly $\frac{1}{2}$ to $\frac{2}{3}$ length of head, spine serrated on inner side. Ventral $1\frac{1}{2}$ to $1\frac{3}{4}$ times as distant from root of caudal as from end of snout. Caudal longer than head. Anal with a light edge.

Total length 200 millim.

Ituri River, Upper Congo.—Types in Vienna Museum.

Distinguished from the two other species of the genus by a broader head, longer nasal barbels, and a longer caudal fin.

3. **CLARIALLABES**, Blgr.

1. CLARIALLABES MELAS, Blgr.

Add:—

4. Ad.	Lebusi R. (Chiloango) at Kuka Muno.	Dr. W. J. Ansorge (C.).

1*a*. CLARIALLABES BREVIBARBIS.

Pellegr. Bull. Soc. Zool. France, xxxviii. 1913, p. 272.

Closely allied to *C. melas*. Distinguished by shorter barbels, the nasal measuring $\frac{2}{3}$ length of head, the maxillary scarcely longer, fewer (9) gill-rakers, and a longer caudal. Dorsal 102; anal 91.

Total length 290 millim.

Ngomo, Ogowe.—Type in Paris Museum.

4. **GYMNALLABES**, Gthr.

1. GYMNALLABES TYPUS, Gthr.

? *Clariallabes longicaudatus*, Pappenh. Mitth. Zool. Mus. Berl. v. 1911, p. 519, fig.

5. **CHANNALLABES**, Gthr.

1. CHANNALLABES APUS, Gthr.

Bouleng. Ann. Mus. Congo, Zool. ii. 3, p. 17 (1912); Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 28.

Add:—

12–13. Ad.	Lebuzi R. (Chiloango) at Kuka Muno.	Dr. W. J. Ansorge (C.).
14. Yg.	Luali R. (Chiloango) at Lundo.	,,

6. **HETEROBRANCHUS**, Geoffr.

1. HETEROBRANCHUS BIDORSALIS, I. Geoffr.

Pellegr. Poiss. Bass. Tchad, p. 92, pl. ix. fig. 2 (1914).

3. HETEROBRANCHUS ISOPTERUS, Blkr.

Add :—

5. Yg.	Tano R., Gold Coast.	Dr. H. G. F. Spurrell (P.).
6. Hgr.	Near Dunkwa, Gold Coast.	,,

8. **PLOTOSUS**, Lacep.

1. PLOTOSUS ANGUILLARIS, Bl.

Gilchr. & Thomps. Ann. S. Afr. Mus. xi. 1913, p. 448.

9. **EUTROPIUS**, M. & T.

3. EUTROPIUS NILOTICUS, Rüpp.

Pellegr. Poiss. Bass. Tchad, p. 93, fig. (1914).

Add :—

98–99. Ad.	Niger above junction with Benue.	A. C. Francis, Esq. (P.).
100–101. Yg.	Head-waters of Aboina R., Cross R.	Capt. R. D. Gard'ner (P.).
102. Ad.	Geba R. at Bafata, Portug. Guinea.	Dr. W. J. Ansorge (C.).

4. EUTROPIUS GRENFELLI, Blgr.

Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 29.

7. EUTROPIUS MENTALIS, Blgr.

? *Eutropius banguelensis* (non Bouleng.), Pappenh. Mitth. Zool. Mus. Berl. v. 1911, p. 520.

Add :—

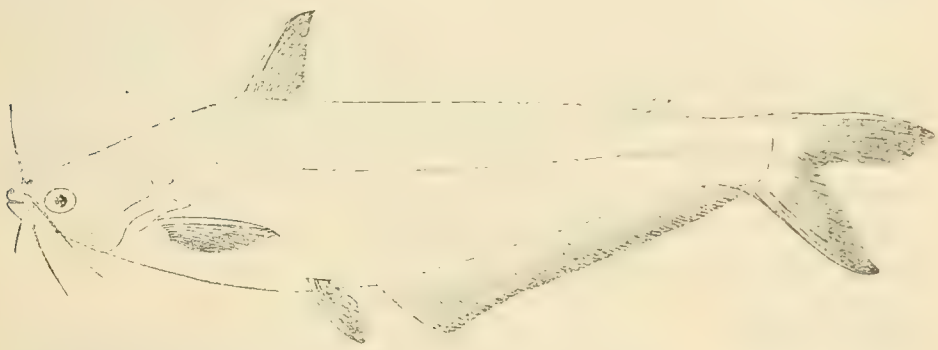
15–16. Ad.	Ja R. at Esamesa, S. Cameroon.	G. L. Bates, Esq. (C.).
17. Ad.	Nyong R. at Akonolinga, S. Cameroon.	,,
18–19. Ad.	Tano R., Gold Coast.	Dr. H. G. F. Spurrell (P.).

9 *a*. EUTROPIUS ANSORGII.

Bouleng. Ann. & Mag. N. H. (8) vi. 1910, p. 555.

Depth of body 4 times in total length, length of head 5 times. Head $1\frac{1}{3}$ times as long as broad; snout broad, a little longer than eye; both jaws equal in front; eye perfectly lateral, 5 times in length of head, 3 times in interorbital width; width of mouth equal to or a little less than interorbital width; vomero-palatine teeth forming an uninterrupted band, which is a little narrower than the band of præmaxillary teeth. Nasal barbel $\frac{1}{2}$ to $\frac{2}{3}$ length of head, maxillary $\frac{2}{3}$ to $\frac{3}{4}$, outer mandibular $\frac{1}{2}$, inner mandibular $\frac{1}{3}$ to $\frac{1}{4}$. Gill-rakers moderately long,

Fig. 177.



Eutropius ansorgii.
Type. $\frac{1}{2}$.

9 to 12 on lower part of anterior arch. Dorsal I 6, entirely in advance of ventral, about twice as distant from caudal as from end of snout, its spine slender, $\frac{3}{5}$ to $\frac{2}{3}$ length of head, very feebly serrated behind. Anal 55–59. Pectoral not reaching ventral, its spine stronger and a little longer than that of dorsal, inner border feebly serrated. Caudal deeply forked, with pointed lobes. Caudal peduncle as long as deep or a little deeper than long. Brownish above, white below; a dark, ill-defined blotch on each side above the pectoral fin; vertical fins brownish, with a light streak along the anal.

Total length 240 mm.

Angola.

1–2. Types. Quanza R. at Cunga. Dr. W. J. Ansorge (C.).

Distinguished from *E. bocagii* by the longer barbels.

9 *b*. EUTROPIUS SERAOI.

Boulenq. Ann. & Mag. N. H. (8) vi. 1910, p. 556.

Depth of body 4 to $4\frac{1}{2}$ times in total length, length of head $4\frac{2}{3}$ to 5 times. Head $1\frac{1}{4}$ to $1\frac{1}{3}$ times as long as broad; snout broad, as long as or a little longer than eye, projecting slightly beyond lower jaw; eye perfectly lateral, $3\frac{1}{2}$ to 4 times in length of head, $2\frac{1}{2}$ to 3 times in interorbital width; width of mouth equal to interorbital width; vomeropalatine teeth an uninterrupted band, which is narrower than the band of præmaxillary teeth. Nasal barbel $\frac{3}{5}$ to $\frac{5}{6}$ length of head, maxillary $1\frac{1}{4}$ to $1\frac{1}{2}$, outer mandibular $\frac{3}{4}$ to 1, inner mandibular $\frac{1}{2}$ to $\frac{2}{3}$. Gill-rakers rather long and closely set, 15 to 18 on lower part of anterior arch. Dorsal I 6, entirely in advance of ventral, $2\frac{1}{5}$ to $2\frac{1}{2}$ times as distant from caudal as from end of snout, its spine slender, $\frac{2}{3}$ to $\frac{3}{4}$ length of head, very feebly serrated behind. Anal 46–53. Pectoral reaching ventral or not, its spine stronger and a little longer than that of dorsal, inner border feebly serrated. Caudal deeply forked, with pointed lobes. Caudal peduncle as long as deep. Back brownish, sides and belly silvery white; a more or less distinct dark lateral stripe; a dark ill-defined blotch on each side above the pectoral fin; fins whitish.

Total length 200 millim.

Angola.

1–4. Types.	Bengo R. at Cabiri.	Dr. W. J. Ansorge (C.).
5. Type.	Lucalla R. at Lucalla.	,,
6–11. Ad. & hgr.	Bengo R. at Quifangondo.	,,

Distinguished from the preceding principally by the longer barbels and lower number of anal rays.

11. EUTROPIUS DEPRESSIROSTRIS, Peters.

Gilchr. & Thomps. Ann. S. Afr. Mus. xi. 1913, p. 449.

Add :—

10–19. Hgr. & yg.	Eusso Nyiro, below falls, Brit. E. Africa.	A. B. Percival, Esq. (P.).

11 *a*. EUTROPIUS MULTILINEATUS.

Pellegr. Bull. Soc. Zool. France, xxxviii. 1913, p. 273.

Depth of body $3\frac{1}{2}$ to $3\frac{3}{4}$ times in total length, length of head $4\frac{1}{3}$ to $4\frac{3}{4}$ times. Head $1\frac{1}{2}$ times as long as broad; snout broad, jaws equal in

front or lower slightly projecting; eye lateral, $3\frac{3}{4}$ to 5 times in length of head, $2\frac{1}{3}$ to 3 times in interorbital width, which equals width of mouth; vomero-palatine teeth forming an uninterrupted or slightly interrupted band, which is as broad as præmaxillary band. Nasal barbel a little less than $\frac{1}{2}$ length of head, maxillary $\frac{3}{4}$ to $\frac{4}{5}$, outer mandibular $\frac{2}{5}$ to $\frac{1}{2}$, inner mandibular $\frac{1}{5}$ to $\frac{2}{7}$. 8 to 10 gill-rakers on lower part of anterior arch. Dorsal I 6, in advance of ventrals; spine slender, finely denticulate behind. Anal 53–57. Pectoral not reaching ventral, its spine finely serrated on inner side. Caudal forked, with pointed lobes. Caudal peduncle about as long as deep. Brown above, silvery on the sides and beneath; two brown longitudinal streaks above the lateral line, a third below it, and another at the base of the anal fin; a black spot above the pectoral fin.

Total length 270 millim.

Ngomo, Ogowe.—Types in Paris Museum.

Differs from *E. depressirostris* chiefly by the broader band of vomero-palatine teeth, fewer gill-rakers, and the coloration.

10. SCHILBE, Cuv.

1. SCHILBE MYSTUS, L.

Gilchr. & Thomps. Ann. S. Afr. Mus. xi. 1913, p. 451; Pellegr. Poiss. Bass. Tchad, p. 95, pl. ix. fig. 3 (1914).

Add:—

126–130. Ad. & hgr.	Okovango R., L. Ngami.	R. B. Woosnam, Esq. (C.).
131. Yg.	Head-waters of Aboina R., Cross R.	Capt. R. D. Gard'ner (P.).
132. Yg.	Culufu R. at Bafata, Portug. Guinea.	Dr. W. J. Ansorge (C.).
133–134. Ad.	Malawa R., Kavirondo, 4000 ft.	Sir F. J. Jackson (P.).

2 *a*. SCHILBE CONGOLENSIS.

Steind. Anz. Ak. Wien, 1912, p. 445, and Denkschr. Ak. Wien, lxxxix. 1913, p. 30.

Depth of body $3\frac{1}{4}$ to $3\frac{2}{3}$ times in total length, length of head $3\frac{2}{3}$ to $3\frac{3}{4}$ times; nape ascending very abruptly from the occiput to the dorsal fin. Head $1\frac{1}{4}$ to $1\frac{1}{2}$ times as long as broad; snout extending a little beyond lower jaw; eye 5 times in length of head, interorbital width $1\frac{2}{3}$ to $1\frac{4}{5}$

times; nasal barbel $\frac{5}{7}$ length of head, maxillary and outer mandibular as long as head. Dorsal I 6, originating a little in front of vertical of ventrals; spine serrated behind. Anal 56. Pectoral extending beyond base of ventral, its spine longer than that of dorsal and serrated on inner border. Dark brown above, greyish brown beneath; a large blackish-brown spot on each side behind the head.

Total length 100 millim.

Ja River (Congo), South Cameroon.—Types in Vienna Museum.

Distinguished from *S. uranoscopus* by the longer barbels.

2 *b*. SCHILBE MARMORATUS.

Bouleng. Bull. Soc. Nat. Luxemb. 1911, p. 222.

Depth of body $3\frac{1}{2}$ to 4 times in total length, length of head $4\frac{1}{2}$ to 5 times. Head as long as broad or a little longer than broad; snout extending a little beyond lower jaw; eye perfectly lateral, 4 to $4\frac{1}{2}$ times in length of head, 3 to $3\frac{1}{3}$ times in interocular width; nasal barbel $\frac{3}{4}$ to $\frac{4}{5}$ length of head, maxillary a little longer than head, outer mandibular 3 times as long as inner and a little shorter than maxillary. Dorsal I 5, in front of vertical of ventrals; spine very feebly serrated behind, $\frac{2}{3}$ length of head. Anal 52–54, reaching root of caudal. Pectoral reaching ventral, its spine longer than that of dorsal and serrated on inner border. Caudal deeply notched, upper lobe longer. Yellowish, marbled with brown; a large round blackish spot on each side behind the head; fins brown or marbled with brown; a yellowish bar across pectoral and ventral; caudal with the base dark brown or blackish, followed by a yellowish bar.

Total length 145 millim.

Congo (Sankuru River).—Type in Luxemburg Museum.

1. Ad.	Sankuru R. at Kondue, Kasai.	M. E. Luja (C.); Luxemburg Museum (P.).

Distinguished from *S. mystus* and *S. uranoscopus* by the longer barbels, the absence of caudal peduncle, and the coloration.

10 *a*. ANSORGIA.

Bouleng. Ann. Mus. Congo, Zool. ii. 3, p. 17 (1912).

Characters of *Eutropius*, except for absence of anterior or inner barbels. Vertebræ 46 (16+30).

A single species.

1. ANSORGIA VITTATA.

Bouleng. l. c. pl. xix. fig. 2.

Depth of body $4\frac{1}{2}$ to $4\frac{2}{3}$ times in total length, length of head $4\frac{2}{3}$ to $5\frac{1}{3}$ times. Head $1\frac{1}{2}$ to $1\frac{2}{3}$ times as long as broad; snout broad, rounded, as long as eye in adult, extending a little beyond lower jaw; eye perfectly lateral, $2\frac{2}{3}$ (young) to $3\frac{1}{3}$ times in length of head, $1\frac{1}{3}$ to $1\frac{2}{3}$ times in interorbital width, which equals width of mouth; vomero-palatine teeth forming an uninterrupted band, the width of which equals or a little exceeds that of the præmaxillary band; nasal barbel

Fig. 178.

Ansorgia vittata.
Type (A. M. C.). ♀.

$\frac{2}{3}$ to $\frac{3}{4}$ diameter of eye; maxillary barbel as long as head or a little shorter and about $1\frac{2}{3}$ times mandibular barbel. Gill-rakers moderately long, slender, and wide apart, 6 or 7 on lower part of anterior arch. Dorsal I 5, entirely in front of vertical of ventrals; spine moderately strong, serrated behind, and produced into a filament. Adipose dorsal small. Anal 42–46. Pectoral reaching ventral, its spine a little stronger than that of dorsal and serrated on inner side. Caudal forked, with pointed lobes. Caudal peduncle as long as deep. Back brown, sides silvery, belly white; a black band along each side, from the head to the lower lobe of the caudal, where it bends down at an angle; this band as broad as or a little narrower than the silvery space separating it from the brown of the back; fins white, base of anal sometimes dotted with black.

Total length 107 millim.

Chiloango.

1. Type.	Chiloango R. at Mayili.	Dr. W. J. Ansorge (C.).
2–4. Types.	Loango R. at N'Kutu.	,,
5. Skel.	,, ,,	,,

12. PHYSAILIA, Blgr.

1. PHYSAILIA PELLUCIDA, Blgr.

Add:—

19–20. Hgr.	Creek W. of Lagos.	Major G. E. Bruce (P.).
21. Hgr.	Old Calabar.	Mr. J. Paul Arnold (P.).

2*a*. PHYSAILIA ANSORGII.

Bouleng. Ann. & Mag. N. H. (8) vi. 1910, p. 557.

Depth of body $4\frac{1}{2}$ times in total length, length of head 5 times. Snout broad, rounded, not projecting beyond mouth, a little shorter than eye; latter perfectly lateral, 3 times in length of head, and a little less than interocular width, which equals width of mouth. Nasal barbel $\frac{2}{5}$ total length, maxillary and mandibular $\frac{1}{2}$. Pectoral as long as head, extending beyond root of ventral, spine serrated on inner side. Ventral very small, $2\frac{1}{2}$ times as distant from caudal as from end of snout. Anal 60–65, narrowly separated from caudal, which is deeply forked, with pointed lobes. Yellowish, more or less dotted with black, especially on the back and anal fin; lateral line black.

Total length 63 millim.

Angola.

1. Type.	Quanza R. at Cunga.	Dr. W. J. Ansorge (C.).

Intermediate between *P. pellucida* and *P. somalensis*; distinguished from the former by longer barbels, from the latter by the serrated pectoral spine.

3*a*. PHYSAILIA VILLIERSI.

Bouleng. Ann. Mus. Congo, Zool. ii. 3, p. 17, pl. xvii. fig. 6 (1912).

? *Physailia occidentalis*, Pappenh. in Schubotz, Wiss. Ergebn. Deutsch. Z.-Afr. Expèd., Zool. iii. p. 248 (1914).

Depth of body 4 to $4\frac{1}{2}$ times in total length, length of head 5 to $5\frac{1}{2}$ times. Snout rounded, not extending beyond mouth, shorter than eye, which is perfectly lateral and $2\frac{1}{2}$ (young) to 3 times in length of head and equal or nearly equal to interocular width; nasal barbel a little shorter than maxillary and mandibulars, which measure $\frac{1}{2}$ to $\frac{3}{5}$ total length. Gill-rakers long and slender, about 30 on lower part of anterior arch. Pectoral as long as head or a little shorter, reaching ventral or a little beyond, spine rather feeble and without serration.

Ventral small, $1\frac{2}{3}$ to 2 times as distant from caudal as from end of snout. Anal 50–57, reaching caudal, which is forked, with pointed lobes, and extends on caudal peduncle. Yellowish, more or less speckled with brown on the back and sides; a black humeral spot; a black line along the side, widening a little before reaching base of caudal fin; a series of large black dots at base of anal, one to each ray; fins white.

Total length 67 millim.

Chiloango and Lucola River near Cabinda.

1–2. Types.	Chiloango R. at Mayili.	Dr. W. J. Ansorge (C.).
3–6. Types.	Luali R. at Lundo.	,,
7. Type.	Luculla R.	,,
8–12. Types.	Lucola R. near Cabinda.	,,

Distinguished from *P. somalensis* by the shorter barbels and the lower number of anal rays.

Fig. 179.

Physailia villiersi.
Type (A. M. C.).

13. **PARAILIA**, Blgr.

2. PARAILIA LONGIFILIS, Blgr.

Add :—

3–5. Hgr.	Geba R. at Bafata, Portug. Guinea.	Dr. W. J. Ansorge (C.).

14. **BAGRUS**, Cuv.

1. BAGRUS BAYAD, Forsk.

Pellegr. Poiss. Bass. Tchad, p. 96, pl. ix. fig. 4 (1914).

3. BAGRUS DOCMAC, Forsk.

Steind. Sitzb. Ak. Wien, cxx. i. 1912, p. 1180; Pappenh. in Schubotz, Wiss. Ergebn. Deutsch. Z.-Afr. Exped., Zool. iii. p. 248 (1914).

Recorded from Lakes Albert and Tanganyika.

Add:—

87–88. Hgr.	Victoria Nile, between L. Kioja and Murchison Falls.	F. H. Melland, Esq. (P.).

5. BAGRUS UROSTIGMA, Vincig.

Add:—

1–2. Hgr. & yg.	Eusso Nyiro, above falls.	A. B. Percival, Esq. (P.).

7. BAGRUS UBANGENSIS, Blgr.

Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 31, fig.

Recorded from South Cameroon (Congo System).

15. CHRYSICHTHYS, Blkr.

2 *a*. CHRYSICHTHYS GRAUERI.

Steind. Anz. Ak. Wien, 1911, p. 529, and Sitzb. Ak. Wien, cxx. i. 1912, p. 1178, pl. iii.

Depth of body 5 to $5\frac{3}{5}$ times in total length, length of head 3 times. Head moderately depressed, $1\frac{1}{3}$ to $1\frac{1}{2}$ times as long as broad, rough with radiating striæ above and on the gill-covers; occipital process slightly longer than broad, extending to the interneural shield; snout rounded-subtruncate, twice as broad as long, projecting a little beyond lower jaw, $\frac{2}{5}$ to $\frac{3}{5}$ length of head; eye $5\frac{1}{2}$ to 6 times in length of head and $1\frac{2}{3}$ times in interorbital width; width of mouth $1\frac{1}{2}$ to $1\frac{4}{5}$ times in length of head; præmaxillary band of teeth curved, $6\frac{1}{4}$ to $7\frac{1}{2}$ times as long as broad; vomero-pterygoid teeth forming a long and narrow band, interrupted in the middle; nasal barbel a little longer than eye; maxillary barbel $\frac{2}{5}$ to $\frac{1}{2}$ length of head; outer mandibular barbels about twice as long as inner and nearly $\frac{1}{3}$ length of head. 10 gill-rakers on lower part of anterior arch. Dorsal I 6, rather small, $1\frac{3}{7}$ times as distant from root of caudal as from end of snout; spine short and strong, serrated behind, about $\frac{1}{3}$ length of head; first soft ray longest, about $\frac{1}{2}$ length of head. Adipose dorsal about twice as long as deep, its base equal to that of the rayed dorsal, from which it is separated by

a space equal to $2\frac{1}{5}$ to $2\frac{1}{3}$ times its base. Anal 13–14, 8–9 rays branched. Pectoral spine about $\frac{1}{2}$ length of head, strongly serrated on inner side. Caudal deeply forked, with pointed lobes, longest rays $2\frac{2}{5}$ to $2\frac{1}{2}$ times length of median. Caudal peduncle $1\frac{1}{2}$ times as long as deep.

Total length 376 millim.

Lake Tanganyika.—Types in Vienna Museum.

Closely allied to *C. sharpii*, but head and adipose dorsal fin larger.

3. CHRYSICHTHYS ACUTIROSTRIS, Gthr.

Add:—

2–3. Ad. & yg.	Quanza R. at Dondo.	Dr. W. J. Ansorge (C.).
4. Ad.	Luculla R. at Kalenga.	,,
5–7. Ad. & yg.	Bengo R. at Cabiri.	,,
8–12. Ad., hgr., & yg.	,, ,, Quifangondo.	,,

4. CHRYSICHTHYS FURCATUS, Gthr.

Add:—

10. Ad.	Lebuzi R. (Chiloango) at Kuka Muno.	Dr. W. J. Ansorge (C.).
11. Ad.	Geba R. at Bafata, Portug. Guinea.	,,

4*a*. CHRYSICHTHYS BOCAGII.

Bouleng. Ann. & Mag. N. H. (8) vi. 1910, p. 557.

Depth of body $4\frac{1}{2}$ to $4\frac{2}{3}$ times in total length, length of head $3\frac{1}{2}$ times. Head moderately depressed, $1\frac{1}{2}$ times as long as broad, its upper surface slightly rugose, covered with thin skin; occipital process narrow, extending to the small interneural shield; snout obtusely pointed; eye $3\frac{1}{2}$ to 4 times in length of head, $1\frac{1}{3}$ to $1\frac{1}{2}$ times in interocular width; mouth inferior, its width $2\frac{1}{2}$ times in length of head; præmaxillary band of teeth nearly straight, 3 times as long as broad; vomero-pterygoid teeth not much developed, forming a narrow band interrupted in the middle; nasal barbel 1 to $1\frac{1}{3}$ diameters of eye, maxillary $1\frac{1}{5}$ to $1\frac{1}{4}$ lengths of head, outer mandibular $\frac{2}{3}$ to $\frac{3}{4}$, inner mandibular $\frac{2}{5}$ to $\frac{1}{2}$. Gill-rakers rather long, 15 to 17 on lower part of anterior arch. Dorsal I 6, $1\frac{1}{4}$ to $1\frac{1}{3}$ as distant from root of caudal as from end of snout; spine strong, feebly serrated behind, $\frac{2}{3}$ length of head; first and second soft rays longest, as long as head, reaching or nearly reaching adipose fin when folded; adipose fin as long as base of rayed dorsal, $\frac{1}{2}$ as long as its distance from latter. Anal 13, 9 rays branched. Pectoral shorter

than head, spine strongly serrated on inner side. Caudal deeply forked, with long pointed lobes, middle rays $\frac{1}{3}$ length of longest. Caudal peduncle $1\frac{1}{3}$ to $1\frac{1}{2}$ times as long as deep. Olive-brown above, white beneath; fins olive-brown.

Total length 160 millim.

Angola.

1–2. Types.	Quanza R. at Dondo.	Dr. W. J. Ansorge (C.).

Closely allied to *C. furcatus*; distinguished by longer barbels.

4*b*. CHRYSICHTHYS ANSORGII.

Bouleng. Ann. & Mag. N. H. (8) vi. 1910, p. 558.

Depth of body $4\frac{1}{2}$ to 5 times in total length, length of head $3\frac{1}{4}$ to $3\frac{2}{3}$ times. Head rather strongly depressed, $1\frac{1}{5}$ to $1\frac{2}{5}$ times as long as broad, its upper surface smooth, covered with thick skin; occipital process narrow, extending to the small interneural shield; snout rounded; eye $3\frac{1}{2}$ (young) to 5 times in length of head, 1 (young) to 2 times in interocular width; mouth inferior, its width $1\frac{1}{3}$ to $1\frac{1}{2}$ times in length of head (narrower in young); præmaxillary band of teeth straight or feebly curved, 4 times as long as broad; vomero-pterygoid teeth forming a strong and long band, narrowly interrupted in the middle; nasal barbel as long as eye, maxillary $\frac{3}{4}$ to $\frac{5}{6}$ length of head (as long as head in very young), outer mandibular $\frac{1}{2}$ to $\frac{2}{3}$, inner mandibular $\frac{1}{3}$ to $\frac{1}{2}$. Gill-rakers rather long, 13 to 15 on lower part of anterior arch. Dorsal I 6, $1\frac{1}{4}$ to $1\frac{1}{2}$ times as distant from end of snout as from root of caudal; spine strong, feebly serrated behind, $\frac{2}{5}$ to $\frac{3}{4}$ length of head; second or third soft ray longest, $\frac{1}{2}$ to $\frac{3}{4}$ length of head; adipose fin as long as or a little shorter than base of rayed dorsal, $\frac{1}{3}$ to $\frac{1}{2}$ as long as its distance from latter. Anal 13, 8 or 9 rays branched. Pectoral much shorter than head, spine strongly serrated on inner side. Caudal moderately forked, the lobes obtusely pointed in the adult, middle rays $\frac{2}{5}$ to $\frac{1}{2}$ length of longest. Caudal peduncle $1\frac{1}{2}$ times as long as deep. Olive-brown or grey to blackish above, white beneath; fins olive-brown.

Total length 300 millim.

Angola.

1–10. Types.	Quanza R. at Dondo.	Dr. W. J. Ansorge (C.).
11. Type.	Bengo R. at Cabiri.	,,

In the adult and half-grown state easily distinguished from the preceding by the broader flatter head, shorter maxillary barbels, and less deeply forked caudal fin.

5. CHRYSICHTHYS NIGRODIGITATUS, Lacep.

Add :—

43. Yg.	Jebba, Upper Niger.	C. H. Firmin, Esq. (P.).
44–46. Hgr. & yg.	Tano R., Gold Coast.	Dr. H. G. F. Spurrell (P.).
47–48. Ad. & hgr.	Geba R. at Bafata, Portug. Congo.	Dr. W. J. Ansorge (C.).
49–50. Ad. & hgr.	Akonolinga, Nyong R., S. Cameroon.	G. L. Bates, Esq. (C.).
51–52, 53–56. Yg.	N. Sherbo district, Sierra Leone.	N. W. Thomas, Esq. (P.).

6. CHRYSICHTHYS WALKERI, Gthr.

Add :—

14–16. Ad.	Lebuzi R. (Chiloango) at Kuka Muno.	Dr. W. J. Ansorge (C.).
17–18. Hgr. & yg.	Chiloango R. at Mayili.	,,
19. Hgr.	Chiloango Town.	,,
20. Ad.	Luculla R. (Chiloango).	,,
21–22. Ad.	Geba R. at Bafata, Portug. Guinea.	,,
23. Yg.	N. Sherbo district, Sierra Leone.	N. W. Thomas, Esq. (P.).

Two species have been confounded in my description of *C. walkeri*. *C. persimilis* (fig. 254) is to be erased from the synonymy.

6 *a*. CHRYSICHTHYS PERSIMILIS.

Günth. Proc. Zool. Soc. 1899, p. 727, pl. xliii. ; Bouleng. Ann. Mus. Congo, Zool. ii. 3, p. 19 (1912).

Width of mouth greater than in *C. walkeri*, $1\frac{2}{3}$ to 2 times in length of head.

Gaboon, Chiloango.

1. Type.	Gaboon.	R. B. N. Walker, Esq. (C.).
2. Ad.	Lebuzi R. (Chiloango) at Kuka Muno.	Dr. W. J. Ansorge (C.).
3. Ad.	Luali R. (Chiloango) at Lundo.	,,

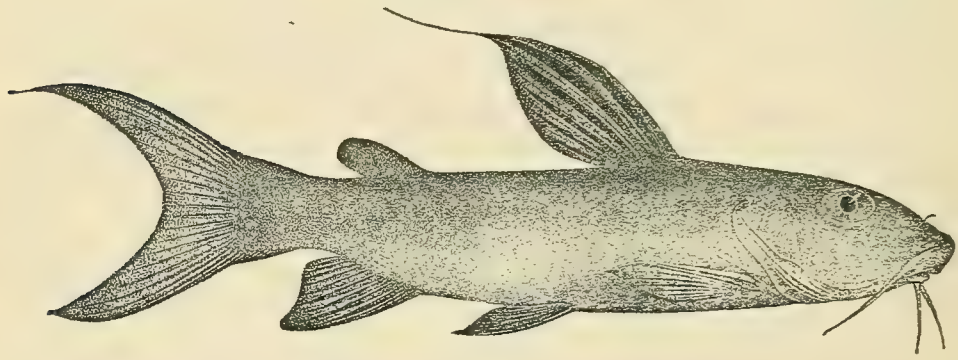
6 *b*. CHRYSICHTHYS FILAMENTOSUS.

Bouleng. Ann. Mus. Congo, Zool. ii. 3, p. 19, pl. xviii. fig. 2 (1912).

Depth of body $4\frac{1}{3}$ to 5 times in total length, length of head $3\frac{1}{3}$ to $3\frac{1}{2}$ times. Head moderately depressed, $1\frac{2}{3}$ to 2 times as long as broad,

smooth or feebly rugose above; occipital process narrow, in contact with the small interneural shield; snout obtusely pointed, nearly as long as broad; eye 3 (young) to 4 times in length of head, equal or nearly equal to interorbital width; width of mouth $2\frac{2}{3}$ to 3 times in length of head; præmaxillary band of teeth straight, nearly 3 times as long as broad; teeth on palate reduced to two small narrow bands; nasal barbel $\frac{1}{3}$ to $\frac{1}{2}$ diameter of eye, maxillary barbel $\frac{1}{2}$ length of head in adult, $\frac{2}{3}$ to $\frac{3}{4}$ in young. 14 to 16 gill-rakers on lower part of anterior arch. Dorsal I 6, $1\frac{1}{5}$ to $1\frac{1}{3}$ times as distant from caudal as from end of snout; spine very feebly serrated behind, $\frac{1}{2}$ to $\frac{2}{3}$ length of head; first soft ray longest, at

Fig. 180.



Chrysichthys filamentosus.
Type (A. M. C.). $\frac{1}{2}$.

least as long as head, usually much longer. Adipose dorsal small, its base $\frac{1}{4}$ to $\frac{1}{3}$ its distance from rayed dorsal. Anal 11–13, 7–8 rays branched. Pectoral nearly $\frac{2}{3}$ length of head; spine strongly serrated on inner border. Caudal deeply forked, lobes long and pointed, upper longer, 3 to $3\frac{1}{2}$ times as long as median rays. Caudal peduncle $1\frac{1}{2}$ to $1\frac{2}{3}$ times as long as deep. Olive-brown above, white beneath, silvery on the sides; fins greyish, end of dorsal blackish.

Total length 215 millim.

Chiloango.

1. Type.	Luali R. at Buco Zau.	Dr. W. J. Ansorge (C.).
2. Type.	„ at Lundo.	„
3–4. Types.	Loango R. at N'Kutu.	„
5–6. Types.	Lebuzi R. at Kuka Muno.	„
7. Type.	Chiloango Town.	„

Very closely allied to *C. walkeri*.

7. CHRYSICHTHYS AURATUS, Geoffr.

Pellegr. Poiss. Bass. Tchad, p. 98, fig. (1914).

10. CHRYSICHTHYS LONGIBARBIS, Blgr.

Add :—

5.	Yg.	Leopoldville.	Messrs. Dubois and Mouchet (C.).

11 *a*. CHRYSICHTHYS THONNERI.

Steind. Anz. Ak. Wien, 1912, p. 446, and Denkschr. Ak. Wien, lxxxix. 1913, p. 33, pl. v.

Depth of body 4 to $4\frac{1}{3}$ times in total length, length of head $2\frac{2}{3}$ to $2\frac{5}{6}$ times. Head nearly $1\frac{1}{2}$ times as long as broad, rugose above ; occipital process a little longer than broad, in contact with the small interneural shield ; snout rounded-subtruncate, nearly twice as broad as long ; eye $4\frac{1}{2}$ times in length of head, interorbital width $3\frac{1}{2}$ to $3\frac{2}{3}$ times ; width of mouth nearly twice in length of head ; præmaxillary band of teeth very feebly curved, $5\frac{2}{5}$ to $5\frac{2}{3}$ times as long as broad ; teeth on palate forming a long band, narrowly interrupted in the middle ; nasal barbel 5 to $5\frac{1}{3}$ times in length of head, maxillary $1\frac{1}{9}$ to $1\frac{1}{3}$, outer mandibular $1\frac{3}{4}$ to $1\frac{6}{7}$, inner mandibular $3\frac{1}{2}$. Dorsal I 7, $1\frac{2}{5}$ times as distant from caudal as from end of snout ; spine very feebly serrated behind in its upper half ; first soft ray longest, as long as or a little longer than head. Adipose dorsal a little shorter than its distance from rayed dorsal. Anal 12–13, 8–9 rays branched. Pectoral nearly $\frac{2}{3}$ length of head ; spine strongly serrated on inner border. Caudal deeply notched, longest rays about twice as long as median. Caudal peduncle $1\frac{1}{2}$ times as long as deep. A dark band across occiput, another below anterior part of dorsal.

Total length 235 millim.

Ja River (Congo System), South Cameroon.—Types in Vienna Museum.

Apparently closely allied to *C. duttoni*.

17. CHRYSICHTHYS ORNATUS, Blgr.

Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 35.

Add :—

4.	Yg.	Sankuru R. at Kondue, Kasai.	M. E. Luja (C.) ; Luxemburg Museum (P.).

19 *a*. CHRYSICHTHYS HABERERI.

Steind. Anz. Ak. Wien, 1912, p. 445, and Denkschr. Ak. Wien, lxxxix. 1913, p. 32, pl. iv.

Depth of body 5 times in total length, length of head 3 times. Head strongly depressed, nearly $1\frac{1}{2}$ times as long as broad, covered with thick skin above; lower jaw slightly projecting; occipital process as long as broad, in contact with the small interneural shield; snout rounded, much broader than long; eye $5\frac{1}{2}$ times in length of head, interorbital width 3 times; width of mouth nearly $\frac{1}{2}$ length of head; præmaxillary band of teeth feebly curved, more than 7 times as long as broad; teeth on palate forming a long band, narrowly interrupted in the middle; nasal barbel about $\frac{4}{5}$ diameter of eye, maxillary barbel $\frac{2}{3}$ length of head. 9 or 10 slender gill-rakers on lower part of anterior arch. Dorsal 1 6, nearly $1\frac{1}{2}$ times as distant from caudal as from end of snout; spine feebly serrated behind; first soft ray longest, $\frac{4}{5}$ length of head. Adipose dorsal nearly twice as long as deep, its base a little more than $\frac{1}{2}$ its distance from rayed dorsal. Anal 12, 8 rays branched. Pectoral nearly $\frac{2}{3}$ length of head; spine stronger than dorsal, strongly serrated on inner border. Caudal moderately notched, with rounded lobes, longest rays twice as long as median. Caudal peduncle $1\frac{2}{3}$ times as long as deep.

Total length 305 millim.

Ja River (Congo System), South Cameroon.—Type in Vienna Museum.

Distinguished from all other members of the genus by the projecting lower jaw.

16. **CLAROTES**, Kner.

1. CLAROTES LATICEPS, Rüpp.

Pellegr. Poiss. Bass. Tchad, p. 99, fig. (1914).

Add:—

47–50. Ad. & yg.	Eusso Nyiro, below falls.	A. B. Percival, Esq. (P.).
51. Yg.	Isavo R., Brit. E. Africa.	S. L. Hinde, Esq. (P.).

17. **GEPHYROGLANIS**, Blgr.

3. GEPHYROGLANIS SCLATERI, Blgr.

Gilchr. & Thomps. Ann. S. Afr. Mus. xi. 1913, p. 453.

Recorded from the Kraai R., Cape Province, and the Kafue R., Zambesi.

4. GEPHYROGLANIS TILHOI, Pellegr.

Pellegr. Poiss. Bass. Tchad, p. 101, pl. i. fig. 4 (1914).

4*a*. GEPHYROGLANIS GYMNORHYNCHUS.

Pappenh. in Schubotz, Wiss. Ergebn. Deutsch. Z.-Afr. Exped., Zool. iii. p. 248, pl. iv. fig. 6 (1914).

Depth of body nearly 5 times in total length, length of head $3\frac{3}{5}$ times. Head moderately depressed, $1\frac{3}{4}$ times as long as broad, granulated and striated on the vertex and occiput; occipital process rather longer than broad, in contact with interneural shield; snout conical-subtruncate, nearly as long as eye, which is oval and 3 times in length of head, equal to interorbital width; præmaxillary band of teeth nearly straight; no nasal barbel; maxillary barbel a little over $\frac{4}{5}$ length of head, outer $\frac{1}{2}$ and nearly $1\frac{2}{3}$ times as long as inner. Dorsal I 6, not reaching adipose fin when folded; spine feebly serrated on both sides towards the extremity, $\frac{7}{10}$ length of head; first and second soft rays longest, slightly shorter than head. Adipose dorsal a little deeper than long, its base $\frac{4}{5}$ that of rayed dorsal and about $\frac{1}{2}$ its distance from latter. Anal 12, 9 rays branched. Pectoral spine strongly serrated on inner side, $\frac{3}{5}$ length of head. Caudal deeply forked, with pointed lobes. Caudal peduncle nearly $2\frac{1}{2}$ times as long as deep. Brownish above, silvery on the sides and beneath; a blackish spot behind the gill-cover.

Total length 78 millim.

Aruwimi River, Congo.—Type in Berlin Museum.

Closely allied to *G. tilhoi*, but dorsal not produced and nasal barbel entirely absent.

5*a*. GEPHYROGLANIS HABERERI.

Steind. Anz. Ak. Wien, 1912, p. 449, and Denkschr. Ak. Wien, lxxxix. 1913, p. 36, pl. vi.

Allied to *G. longipinnis*, but nasal barbel extremely short, anterior barbel $\frac{4}{7}$ length of head, and upper surface of head covered with skin; dorsal not reaching adipose fin when folded.

Total length 250 millim.

Ja River (Congo System), South Cameroon.—Type in Vienna Museum.

20. AMPHILIUS, Gthr.

In the definition of the genus, the statement as to the air-bladder is to be corrected. The air-bladder is absent.

2. AMPHILIUS GRANDIS, Blgr.

Add :—

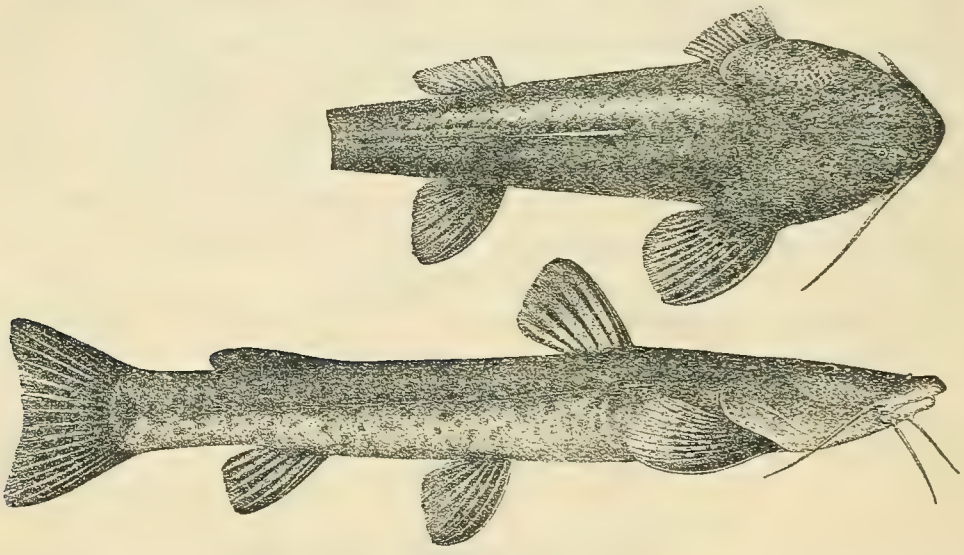
17. Ad.	Nairobi.	Sir F. J. Jackson (P.).
18. Ad.	Eusso Nyiro, below falls.	A. B. Percival, Esq. (P.).

2*a*. AMPHILIUS OXYRHINUS.

Bouleng. Proc. Zool. Soc. 1912, p. 674, pl. lxxx.

Depth of body 6 times in total length, length of head $3\frac{3}{4}$ times. Head much depressed, slightly longer than broad; snout pointed, $\frac{1}{2}$ length of head; eye very small, 11 times in length of head, $2\frac{2}{3}$ times in interorbital

Fig. 181.



Amphilius oxyrhinus.
Type (P. Z. S. 1912). $\frac{5}{7}$.

width; posterior nostril midway between eye and end of snout; maxillary barbel $\frac{2}{3}$ length of head, reaching root of pectoral; outer mandibular barbel $\frac{3}{5}$ length of head, inner nearly $\frac{2}{5}$. Gill-rakers rather long, 7 on lower part of anterior arch. Dorsal I 6, much nearer end of snout than root of caudal. Adipose dorsal low, $3\frac{1}{2}$ times as long as deep, twice as long as rayed dorsal, its length $\frac{2}{3}$ its distance from latter. Anal III 5.

Pectoral a little more than $\frac{2}{3}$ length of head. Ventral a little shorter than pectoral, far behind base of dorsal. Caudal feebly emarginate. Caudal peduncle $1\frac{1}{2}$ times as long as deep. Reddish brown above, spotted with blackish, dirty white beneath.

Total length 195 millim.

Lorian Swamp Basin, British East Africa.

1. Type. Eusso Mara, a swift mountain-stream flowing into the Lorian Swamp. A. B. Percival, Esq. (P.).

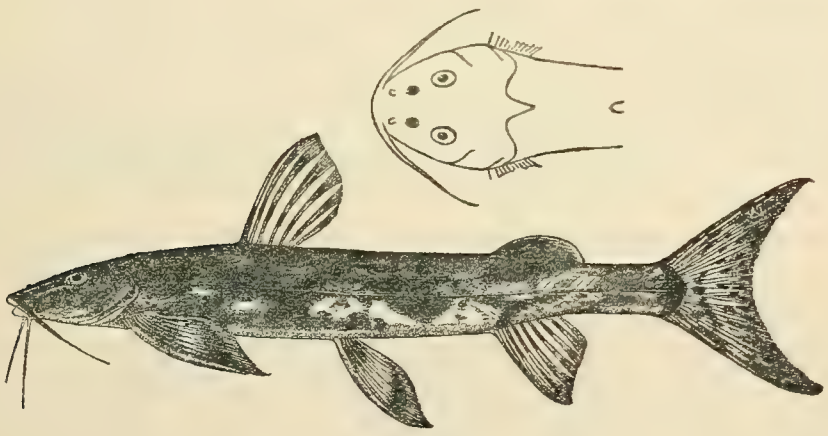
Distinguished from *A. grandis* by the pointed snout, the longer caudal peduncle, and fewer anal rays.

5*a*. AMPHILIUS JACKSONII.

Bouleng. Ann. & Mag. N. H. (8) x. 1912, p. 602.

Depth of body 7 times in total length, length of head $4\frac{2}{3}$ times. Head much depressed, slightly longer than broad; snout rounded, $\frac{1}{2}$ length of head; eye small, 6 times in length of head, twice in inter-orbital width; posterior nostril much nearer eye than end of snout;

Fig. 182.



Amphilius jacksonii.
Type.

maxillary barbel slightly shorter than head, just reaching root of pectoral; outer mandibular barbel $\frac{2}{3}$ length of head, inner $\frac{1}{2}$. Gill-rakers rather long, 7 on lower part of anterior arch. Dorsal I 6, much nearer end of snout than root of caudal. Adipose dorsal 3 times as long as deep, $1\frac{1}{2}$ times as long as rayed dorsal, twice its distance from latter. Anal III 7. Pectoral as long as head. Ventral as long as pectoral, well behind base of dorsal, equally distant from end of

snout and from root of caudal. Caudal deeply emarginate, crescentic. Caudal peduncle twice as long as deep. Yellowish brown, spotted and marbled with dark brown; a blackish streak from the eye to the maxillary barbel; a blackish bar at the root of the caudal; fins whitish, dorsal, ventral, and anal with two black transverse bars, caudal spotted with black.

Total length 100 millim.

Hima River, flowing into Lake George (Ruisamba).

1. Type.	Hima R., eastern foot-hills of Ruwenzori, 3500 ft.	Sir F. J. Jackson (P.).

Distinguished from *A. platychir* and *A. hargeri* by the thinner caudal peduncle.

6. AMPHILIUS LONGIROSTRIS, Blgr.

Add:—

30–33. Ad.	Ja R. at Bitye.	G. L. Bates, Esq. (C.).

6*a*. AMPHILIUS GRAMMATOPHORUS.

Pellegr. Bull. Soc. Zool. France, xxxviii. 1913, p. 237, fig.

Depth of body $5\frac{1}{2}$ to $6\frac{1}{2}$ times in total length, length of head $3\frac{3}{4}$ to $4\frac{1}{4}$ times. Head much depressed, a little longer than broad; snout rounded, as long as postocular part of head; eye small, 8 to 9 times in length of head, $2\frac{1}{2}$ to 3 times in interorbital width; posterior nostril a little nearer eye than end of snout; maxillary barbel nearly as long as head, outer mandibular slightly shorter, inner $\frac{3}{5}$ length of outer. Gill-rakers rather long, 8 on lower part of anterior arch. Dorsal I 6, much nearer end of snout than root of caudal. Adipose dorsal very low, its base $1\frac{1}{2}$ to $1\frac{3}{4}$ times that of rayed dorsal, from which it is separated by a space equal to 2 to $2\frac{1}{2}$ times latter. Anal II 6–7. Pectoral $\frac{3}{4}$ length of head. First ray of ventral under last ray of dorsal. Caudal forked, with rounded lobes. Caudal peduncle as long as deep. Dark-brown, belly whitish; an **X**-shaped light marking between occiput and dorsal fin; others **U**-shaped, behind rayed dorsal and before and behind adipose fin; two light streaks along each side; dorsal and caudal largely spotted with black.

Total length 115 millim.

Kikoulo R., affluent of Konkouré R., French Guinea, 3200 feet.—Types in Paris Museum.

Intermediate between *A. platychir* and *A. atesuensis* in the position of the dorsal fin.

7. AMPHILIUS ATESUENSIS, Blgr.

Add :—

5–6. Ad.	Tano R., Gold Coast.	Dr. H. G. F. Spurrell (P.).
7. Ad.	Near Dunkwa, Gold Coast.	„

9 *a*. AMPHILIUS LAMPII.

Pietschmann, Jahrb. Nass. Ver. Nat. lxvi. 1913, p. 190, pl. ii. fig. 1.

Depth of body 8 times in total length, length of head $4\frac{3}{4}$ to 5 times. Head much depressed, slightly longer than broad; snout rounded-subtruncate, as long as postocular part of head; eye very small, about 10 times in length of head, 2 to $2\frac{1}{2}$ times in interocular width; posterior nostril nearer eye than end of snout; maxillary and outer mandibular barbels about $\frac{1}{2}$ length of head. Dorsal I 6, much nearer end of snout than root of caudal. Adipose dorsal long and low, confluent with caudal. Anal III 6. Pectoral nearly as long as head. Ventral inserted well behind vertical of dorsal. Caudal very feebly emarginate. Brown, lighter beneath, with scattered black spots.

Total length 100 millim.

Mountain-streams near Harrar, Abyssinia.—Types in Wiesbaden Museum.

Differs from all other species in the confluence of the adipose dorsal and caudal fins and in the very feeble emargination of the latter, and constitutes a link between *Amphilius* and *Paramphilius*.

22. PARAUCHENOGLANIS, Blgr.

1 *a*. PARAUCHENOGLANIS ANSORGII.

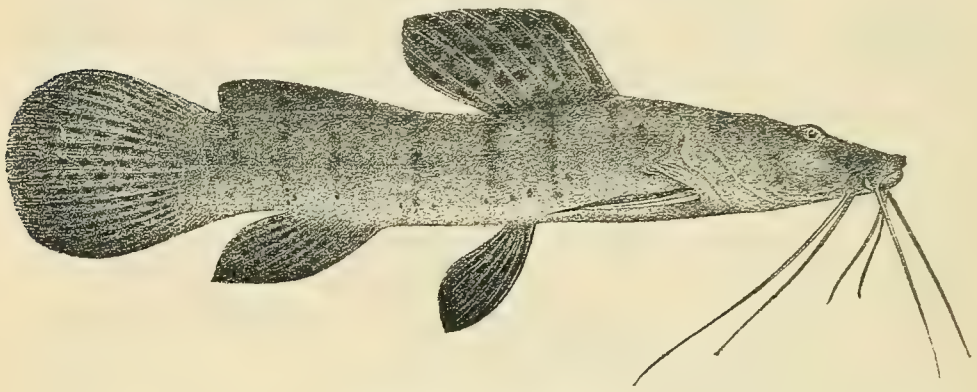
Bouleng. Ann. Mus. Congo, Zool. ii. 3, p. 20, pl. xxii. fig. 3 (1912).

Depth of body $5\frac{2}{3}$ times in total length, length of head $3\frac{1}{3}$ times. Head much depressed, $1\frac{1}{3}$ times as long as broad, smooth above; snout broadly rounded, subtruncate, $\frac{2}{5}$ length of head; occipital process very short, broadly separated from the interneural plate, which is very small and covered with skin; eye superior, 11 times in length of head; mouth broad, terminal; dentition as in *P. guttatus*. Maxillary barbel as long as head, reaching anterior third of pectoral spine, outer mandibular longer, nearly reaching extremity of pectoral. Gill-rakers rather long, 10 on lower part of anterior arch. Humeral process short, triangular, striated. Dorsal I 7; spine smooth, a little less than $\frac{1}{2}$ length of head

and $\frac{2}{3}$ longest soft ray. Adipose dorsal 5 times as long as deep, 3 times as long as its distance from rayed dorsal. Anal 11 (7 rays branched). Pectoral not reaching ventral; spine strongly serrated on inner side. Ventral reaching anal. Caudal rounded. Brown above, with small darker spots and 7 transverse series of round black spots; whitish beneath; fins dark brown, with round black spots.

Total length 175 millim.

Fig. 183.



Parauchenoglanis ansorgii.
Type (A. M. C.). $\frac{5}{7}$.

N'Kutu, below Loango Falls, Chiloango.

1. Type. N'Kutu. Dr. W. J. Ansorge (C.).

Intermediate, as regards the length of the barbels, between *P. guttatus* and *P. macrostoma*.

2. PARAUCHENOGLANIS MACROSTOMA, Pellegr.

Add:—

1. Yg. Ogowe. Rev. E. Haug (C.); Paris Museum (E.).

23. AUCHENOGLANIS, Gthr.

1. AUCHENOGLANIS BISCUTATUS, I. Geoffr.

Pellegr. Poiss. Bass. Tchad, p. 102, fig. (1914).

2. AUCHENOGLANIS OCCIDENTALIS, C. & V.

Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 38.

Auchenoglanis occidentalis, var. *tchadiensis*, Pellegr. op. cit. p. 104, pl. i. fig. 3.

Auchenoglanis acuticeps, Pappenh. in Schubotz, Wiss. Ergebn. Deutsch. Z.-Afr. Exped., Zool. iii. p. 249, pl. v. fig. 1 (1914).

Add :—

59. Ad.	Geba R. at Bafata, Portug. Guinea.	Dr. W. J. Ansorge (C.).
60–61. Yg.	Dunga, Uelle.	Capt. Hutereau (C.).
62–63. Yg.	N. Sherbo district, Sierra Leone.	N. W. Thomas, Esq. (P.).

4. AUCHENOGLANIS ALTIPINNIS, Blgr.

Add :—

2–6. Ad.	Akonolinga, Nyong R.	G. L. Bates, Esq. (C.).

4*a*. AUCHENOGLANIS MONKEI.

Keilhack, Mitth. Zool. Mus. Berl. v. 1910, p. 120.

Depth of body $3\frac{3}{4}$ to $4\frac{1}{2}$ times in total length, length of head $3\frac{1}{4}$ times. Head $1\frac{1}{3}$ times as long as broad, smooth above; snout obtuse, $\frac{2}{5}$ to $\frac{1}{2}$ length of head; occipital process long and narrow, in contact with the rather large interneural plate; eye superior, 8 to 9 times in length of head, 3 times in interorbital width; width of mouth at least $\frac{1}{2}$ length of head; præmaxillary teeth forming a kidney-shaped patch, which is $\frac{1}{3}$ to $\frac{1}{2}$ as broad as long; mandibular teeth in two rounded patches. Maxillary barbel $\frac{3}{4}$ to $\frac{4}{5}$ length of head, outer mandible $1\frac{1}{4}$, inner $\frac{3}{5}$ to $\frac{2}{3}$. Humeral process long and narrow. Dorsal I 7; spine feebly serrated in front, $\frac{1}{2}$ length of head. Adipose dorsal $4\frac{3}{4}$ to $5\frac{1}{2}$ times as long as deep, 6 to 8 times as long as its distance from rayed dorsal. Anal 12. Pectoral spine feebly serrated in front, strongly behind, $\frac{1}{2}$ length of head. Ventral not reaching anal. Caudal rounded. Caudal peduncle deeper than long. 6 or 7 transverse series of dark brown spots on the body; fins with transverse series of dark dots.

Total length 85 millim.

Duala, Cameroon.—Types in Berlin Museum.

Distinguished from *A. altipinnis* and *A. ballayi* by the longer barbels, and from the latter also by the longer occipital process.

4*b*. AUCHENOGLANIS ITURII.

Steind. Sitzb. Ak. Wien, cxx. i. 1911, p. 1185, and Denkschr. Ak. Wien, lxxxix. 1913, p. 37, pl. ix. fig. 1.

Depth of body 4 to $5\frac{2}{3}$ times in total length, length of head $3\frac{1}{2}$ to $4\frac{1}{2}$ times. Head much depressed, $1\frac{1}{2}$ to $1\frac{2}{3}$ times as long as broad, smooth above; snout broadly rounded, subtruncate, nearly $\frac{1}{2}$ length of head; occipital process long and narrow, in contact with the small interneural plate, both of which are covered with skin; eye superior,

7 to 8 times in length of head, and nearly twice in interorbital width. Maxillary barbel $\frac{3}{5}$ to $\frac{3}{4}$ length of head, outer mandibular $1\frac{2}{3}$ times. Humeral process very short. Dorsal I 7; longest soft ray $\frac{1}{2}$ to $\frac{3}{5}$ length of head. Adipose dorsal $5\frac{3}{4}$ to 6 times as long as deep, narrowly separated from the rayed dorsal and from the caudal. Anal 13. Pectoral not reaching ventral; spine strongly serrated on inner side. Ventral not reaching anal. Caudal rounded. 7 to 9 transverse series of round dark spots on the body; numerous round dark spots on the rayed fins.

Total length 295 millim.

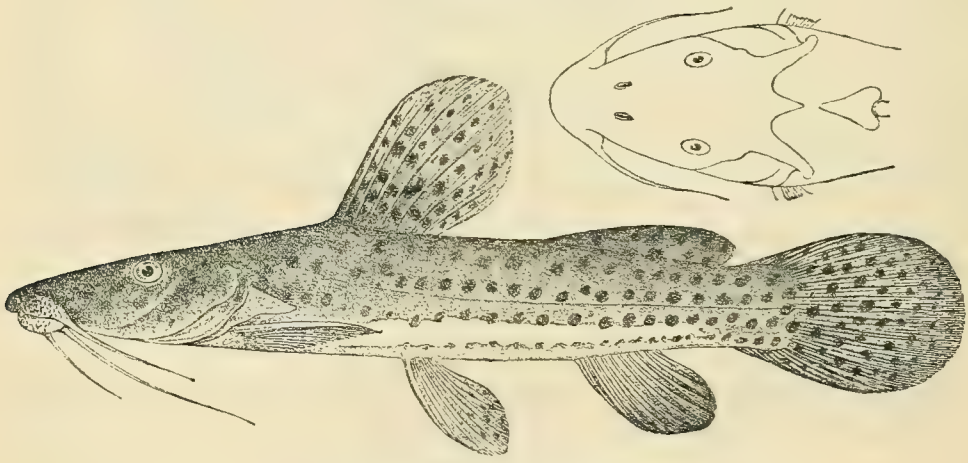
Congo (Ituri and Ja Rivers).—Type in Vienna Museum.

Agrees with the preceding in the long barbels, with *A. ngamensis* in the short humeral process.

5. AUCHENOGLANIS BALLAYI, Sauv.

Auchenoglanis ballayi, var. *gravoti*, Pellegr. Bull. Mus. Paris, 1907, p. 321; Pappenh. Mitth. Zool. Mus. Berl. v. 1911, p. 521, fig.

Fig. 184.



Auchenoglanis longiceps.
Type. $\frac{2}{3}$.

5*a*. AUCHENOGLANIS LONGICEPS.

Bouleng. Ann. & Mag. N. H. (8) xii. 1913, p. 68.

Depth of body 6 times in total length, length of head $3\frac{1}{4}$ times. Head moderately depressed, nearly twice as long as broad, its upper surface smooth; occipital process small, longer than broad, well separated from the feebly developed interneural plate; snout pointed,

a little more than $\frac{1}{2}$ length of head; eye supero-lateral, 8 times in length of head, $2\frac{1}{2}$ in interorbital width; mouth small, inferior, with thick papillose lips; præmaxillary teeth in a small reniform group. Maxillary and inner mandibular barbels not quite $\frac{1}{2}$ length of head, outer mandibular nearly as long as head. Gill-rakers moderately long, 6 on lower part of anterior arch. Humeral process narrow, pointed, smooth. Dorsal I 7; spine strong, smooth, $\frac{3}{5}$ length of head; longest rays $\frac{3}{4}$ length of head. Adipose dorsal 5 times as long as deep, nearly twice as long as its distance from rayed dorsal, not extending to root of caudal. Anal 12 (8 branched rays). Pectoral not reaching ventral, ventral not reaching anal. Caudal rounded. Brownish, with round black spots forming four longitudinal series on the body; belly white; dorsal and caudal fins with numerous round black spots.

Total length 200 millim.

Nyong River, South Cameroon.

1. Type. Akonolinga, Nyong R. G. L. Bates, Esq. (C.).

Distinguished from *A. ballayi* by the longer, narrower head.

24. **NOTOGLANIDIUM**, Gthr.

1 *a*. NOTOGLANIDIUM THOMASI, sp. n.

Depth of body 5 to $5\frac{1}{2}$ times in total length, length of head $3\frac{1}{2}$ times. Head much depressed, $1\frac{1}{3}$ times as long as broad, smooth above; snout

Fig. 185.

Notoglanidium thomasi.
Type.

broadly rounded, shorter than postocular part of head; posterior nostril nearer eye than end of snout; eye very small, 11 times in length of head, 5 times in interocular width. Maxillary barbel $\frac{3}{5}$ length of head, inner mandibular $\frac{1}{2}$, outer mandibular nearly as long as head. Præmaxillary teeth forming a small reniform group. Dorsal I 12–13, low, equally distant from end of snout and from root of caudal; spine short, with a few serræ; anterior soft rays short and more widely spaced than

farther back. Adipose dorsal low, originating at a short distance from the rayed dorsal. Anal 9–10 (6–7 rays branched). Pectoral $\frac{1}{2}$ length of head; spine strong, $\frac{1}{3}$ length of head, striated, with a few retrorse serræ in front. Ventral midway between end of snout and root of caudal, below middle of dorsal. Caudal rounded. Yellowish, with large dark brown spots, some of which may form cross-bands; orange blotches below the head and at the vent; two orange streaks along each side, another at the base of the adipose fin; dorsal and caudal fins spotted with dark brown.

Total length 54 millim.

Sierra Leone.

1–2. Types.	Victoria.	N. W. Thomas, Esq. (P.).
3. Type.	Pujehun.	,,

24 *a*. LIAUCHENOGLANIS, g. n.

Body elongate, feebly compressed. Dorsal fin long, composed of a spine and 19 or 20 branched rays and followed by a small adipose fin which extends to the caudal; anal fin rather long. Ventral fin with 6 rays, inserted below the anterior part of the dorsal. Three pairs of barbels: maxillary and two mandibulars. Nostrils widely separated from each other, the anterior on the upper lip, the posterior slit-like. Eye superior, very small, without free border. Præmaxillaries small, maxillaries long; jaws with villiform teeth; palate toothless. Gill-membranes feebly notched, narrowly attached to isthmus.

Sierra Leone.

Distinguished from *Notoglanidium* by the longer dorsal fin and the more anterior position of the ventrals.

1. LIAUCHENOGLANIS MACULATUS, sp. n.

Depth of body $6\frac{1}{2}$ to 7 times in total length, length of head $3\frac{1}{2}$ to 4 times. Head rather strongly depressed, $1\frac{1}{3}$ times as long as broad, smooth above; snout rounded, a little shorter than postocular part of head; no occipital process, no nuchal shield; posterior nostril much nearer eye than end of snout; eye 4 times in length of snout or interocular width. Maxillary and inner mandibular barbel equal, a little shorter than head, outer mandibular a little longer than head. Præmaxillary teeth forming a small rounded or cordiform patch.

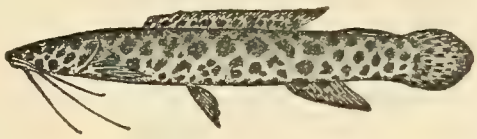
Dorsal I 19–20, spine very short, smooth. Adipose dorsal very low. Anal 11–12. Pectoral short, about $\frac{1}{2}$ length of head; spine strong, serrated on outer side. Ventral a little nearer end of snout than root of caudal. Caudal rounded. Pale brown, with numerous dark brown rounded spots; belly white.

Total length 60 millim.

Sierra Leone.

1–4. Types. N. Sherbo district. N. W. Thomas, Esq. (P.).

Fig. 186.



Liauchenoglanis maculatus.
Type.

27. **ARIUS**, C. & V.

1. ARIUS LATISCUTATUS, Gthr.

Add :—

5. Yg. Tchitoli, Corbal R., Portug. Guinea. Dr. W. J. Ansorge (C.).

3. ARIUS HEUDELOTI, C. & V.

Regan, Ann. & Mag. N. H. (8) xv. 1915, p. 125.
Arius parkii, Regan, l. c.

Add :—

4. Hgr. Lagos. J. Cadman, Esq. (P.).

28. **SYNODONTIS**, Cuv.

3. SYNODONTIS ACANTHOMIAS, Blgr.

Synodontis pfefferi, Steind. Anz. Ak. Wien, 1912, p. 447, and Denkschr. Ak. Wien, lxxxix. 1913, p. 43, pl. viii.

Add :—

12. Ad. Leopoldville. Messrs. Dubois and Mouchet (C.).

6. SYNODONTIS SCHALL, Bl. Schn.

Pellegr. Poiss. Bass. Tchad, p. 106, pl. x. fig. 1 (1914).

Add :—

193–195. Hgr.	Eusso Nyiro, below falls.	A. B. Percival, Esq. (P.).

7. SYNODONTIS GAMBIENSIS, Gthr.

Pellegr. op. cit. p. 107, fig.

Add :—

27–29. Ad. & yg.	Geba R. at Bafata, Portug. Guinea.	Dr. W. J. Ansorge (C.).
30. Yg.	Culufi R. at Bafata, Portug. Guinea.	„

8. SYNODONTIS OCELLIFER, Blgr.

Add :—

8–13. Yg.	Deert, mouth of Gurara R., Niger.	J. J. Simpson, Esq. (P.).

12. SYNODONTIS ZAMBESENSIS, Peters.

Gilchr. & Thomps. Ann. S. Afr. Mus. xi. 1913, p. 458.

14. SYNODONTIS MELANOSTICTUS, Blgr.

Synodontis melanostictus, var. *iturii*, Steind. Anz. Ak. Wien, 1911, p. 534.

A specimen from the Ituri R. (Upper Congo), with 9 branched rays in the anal, is referred, as a variety, to this species.

17. SYNODONTIS VICTORIÆ, Blgr.

Add :—

3–5. Ad. & hgr.	Malawa R., Kavirondo, 4000 ft.	Sir F. J. Jackson (P.).

24. SYNODONTIS NIGRITA, C. & V.

Synodontis ornatus, Pappenh. in Schubotz, Wiss. Ergebn. Deutsch. Z.-Afr. Exped., Zool. iii. p. 251, pl. v. fig. 2 (1914).

The types of *S. ornatus* are from Lake Albert.

Add :—

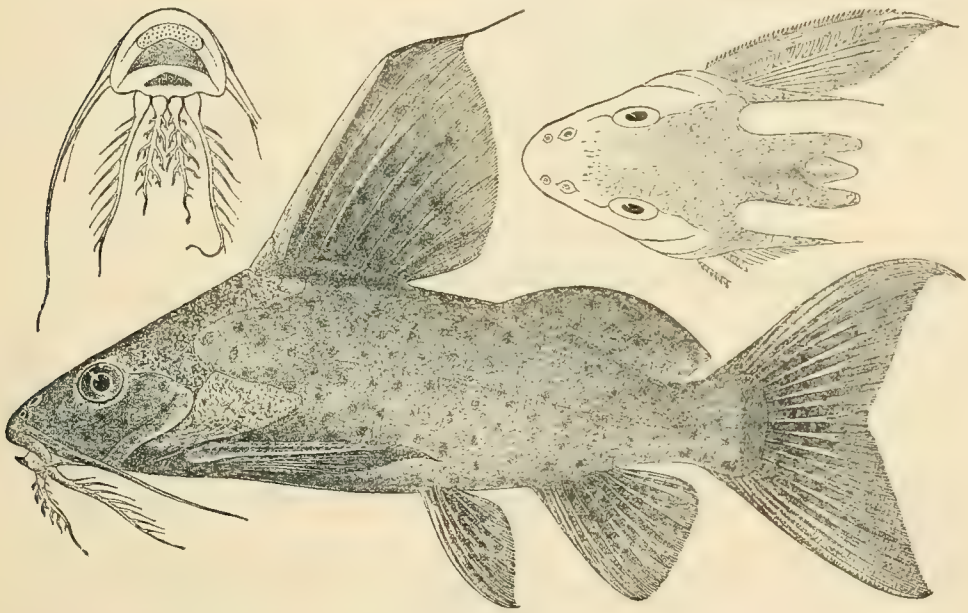
24–26. Yg.	Deert, mouth of Gurara R., Niger.	J. J. Simpson, Esq. (P.).

25*a*. SYNODONTIS ANSORGII.

Bouleng. Ann. & Mag. N. H. (8) vii. 1911, p. 375.

Depth of body 3 to $3\frac{1}{4}$ times in total length, length of head $3\frac{2}{3}$ to 4 times. Head a little longer than broad, granulate above from between the eyes; snout rounded, as long as postocular part of head; eye superolateral, $3\frac{1}{2}$ (young) to $4\frac{1}{2}$ times in length of head, $1\frac{1}{3}$ to $1\frac{2}{3}$ times in interorbital width; lips moderately developed; præmaxillary teeth forming a short and broad band; movable mandibular teeth $\frac{1}{4}$ to $\frac{1}{3}$ diameter of eye, 60 to 80 (50 in young) in number. Maxillary barbel with a broad marginal membrane in its basal third, 1 to $1\frac{1}{4}$ times length

Fig. 187.



Synodontis ansorgii.
Type. $\frac{1}{2}$.

of head, reaching between anterior fourth and posterior third of pectoral spine; outer mandibular barbel $1\frac{1}{2}$ to 2 times as long as inner, former with long slender branches, latter with tubercular ramifications. Gill-opening not extending downwards beyond root of pectoral spine. Occipito-nuchal shield granulate like the occiput, obtusely tectiform, $1\frac{1}{2}$ to $1\frac{2}{3}$ times as long as broad, posterior processes rounded or obliquely truncate. Humeral process much longer than broad, granulate, not keeled, obtusely pointed, extending as far or not quite so far as occipito-nuchal process. Dorsal I 7; spine nearly straight, as long as or longer

than head, not serrated, terminating in a long filament. Adipose dorsal 2 to 3 times as long as deep, 2 to 3 times as long as its distance from rayed dorsal. Anal IV–V 7–8, rounded. Pectoral spine as long as or slightly longer than head, strongly serrated on both sides. Ventral reaching origin of anal or a little beyond. Caudal deeply notched, upper lobe the longer. Caudal peduncle as long as deep or a little deeper than long. Dark brown above and below, head, body, and dorsal fins with numerous round black spots. Young paler brown, with larger and fewer black spots; fins whitish, with large black spots forming cross-bars on the anal and caudal.

Total length 235 millim.

Portuguese Guinea.

1–5. Types.	Geba R. at Bafata.	Dr. W. J. Ansorge (C.).
6. Type.	Culufi R. „	„

Nearest to *S. nigrita* and *S. melanopterus*. Distinguished by much more numerous mandibular teeth.

26. SYNODONTIS MACROSTIGMA, Blgr.

Gilchr. & Thomps. Ann. S. Afr. Mus. xi. 1913, p. 462, fig.

Add:—

3. Hgr.	Solwezi R., N. Rhodesia.	F. H. Melland, Esq. (P.).
4. Yg.	Kafue R., „	L. C. Heath, Esq. (P.).

27. SYNODONTIS OBESUS, Blgr.

Add:—

12. Yg. (?).	Head-water of Aboina R., Cross R.	Capt. R. D. Gard'ner (P.).

28. SYNODONTIS ROBBIANUS, J. A. Smith.

Add:—

11–12. Yg.	Deert, mouth of Gurara R., Niger.	J. J. Simpson, Esq. (P.).

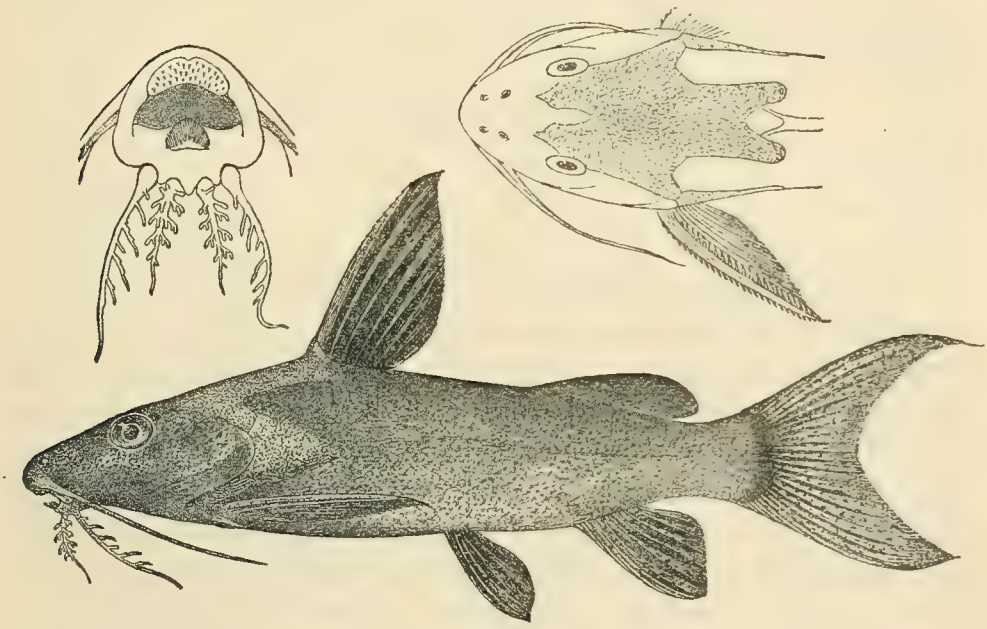
28 *a*. SYNODONTIS STEINDACHNERI.

Bouleng. Ann. & Mag. N. H. (8) xii. 1913, p. 69.

Depth of body 4 times in total length, length of head $3\frac{1}{3}$ times. Head $1\frac{1}{4}$ times as long as broad, rugose above behind snout, which is obtusely pointed and as long as postocular part of head; eye supero-

lateral, 5 times in length of head, $1\frac{3}{4}$ times in interorbital width; lips moderately developed; præmaxillary teeth forming a short and broad band; movable mandibular teeth $\frac{2}{5}$ diameter of eye, 25 in number. Maxillary barbel with a broad marginal membrane at base, as long as head, reaching a little beyond base of pectoral spine; outer mandibular barbel about twice as long as inner, former with long slender branches, latter with ramified branches. Gill-openings not extending downwards beyond root of pectoral spine. Occipito-nuchal shield rough like the occiput, very obtusely tectiform, $1\frac{1}{2}$ times as long as broad, with rounded

Fig. 188.



Synodontis steindachneri.
Type. $\frac{2}{3}$.

posterior processes. Humeral process acutely pointed, longer than broad, granulate, without keel, extending as far back as occipito-nuchal process. Dorsal I 7; spine as long as head, feebly curved, striated, with feebly retrorse serræ in front in its upper part, strongly serrated behind. Adipose dorsal 3 times as long as deep, as long as its distance from rayed dorsal. Anal IV 6, obtusely pointed in front. Pectoral spine slightly shorter than dorsal, not reaching ventral, strongly serrated on outer border, very strongly on inner. Caudal deeply forked, upper lobe the longer. Caudal peduncle as long as deep. Dark olive-brown, body finely speckled with black.

Total length 150 millim.

South Cameroon.

1. Type. Nyong R. G. L. Bates, Esq. (C.).

Distinguished from *S. obesus* and *S. robbianus* by the shorter maxillary barbel and the shorter adipose fin.

32. SYNODONTIS ANGELICUS, Schilth.

Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 39.

33. SYNODONTIS COURTETI, Pellegr

Pellegr. Poiss. Bass. Tchad, p. 108, fig. (1914).

34. SYNODONTIS PARDALIS, Blgr.

Add:—

8–9. Ad. Ja R. at Bitye. G. L. Bates, Esq. (C.).

34 *a*. SYNODONTIS LEOPARDINUS.

Pellegr. Bull. Soc. Zool. France, xxxix. 1914, p. 25.

Depth of body $3\frac{3}{4}$ times in total length, length of head a little more than 3 times. Head $1\frac{1}{3}$ times as long as broad, granulate above; snout rounded, considerably longer than postocular part of head; eye superolateral, $7\frac{1}{2}$ times in length of head, $2\frac{1}{2}$ times in interorbital width; lips moderately developed; præmaxillary teeth forming a rather broad band, in 6 transverse series; movable mandibular teeth $\frac{2}{5}$ diameter of eye, 21 in number. Maxillary barbel feebly margined at base, $\frac{2}{3}$ length of head, not reaching base of pectoral; mandibular barbels strongly branched, outer $1\frac{1}{2}$ times as long as inner. Gill-opening not extending downwards beyond base of pectoral spine. Occipito-nuchal shield granulate like the occiput, scarcely longer than broad, posterior processes pointed. Humeral process granulate, a little longer than broad, obtusely pointed, extending nearly as far back as occipito-nuchal process. Dorsal I 7; spine a little longer than head, not striated, smooth in front, feebly serrated behind. Adipose dorsal $3\frac{2}{3}$ times as long as deep, as long as its distance from rayed dorsal. Anal IV 8, rounded. Pectoral spine $\frac{3}{4}$ length of dorsal, finely denticulated on outer border, strongly serrated on inner. Ventral not reaching anal. Caudal forked, upper lobe the longer. Caudal peduncle $1\frac{1}{2}$ times as long as deep. Yellowish, with

numerous round black spots, the largest, on the side of the body, hardly as large as eye; all the fins also spotted with black.

Total length 160 millim.

Upper Zambesi, Northern Rhodesia.—Type in Paris Museum.

36*a*. SYNODONTIS TESSMANNI.

Pappenh. Mitth. Zool. Mus. Berl. v. 1911, p. 523, fig.

Depth of body $4\frac{1}{3}$ times in total length, length of head $3\frac{1}{6}$ times. Head $1\frac{1}{4}$ times as long as broad, finely granulate above; snout obtusely pointed, $1\frac{1}{2}$ times as long as postocular part of head; eye supero-lateral, $5\frac{1}{2}$ times in length of head, a little more than twice in interorbital width; lips moderately developed; præmaxillary teeth in 3 transverse series; movable mandibular teeth $\frac{1}{3}$ diameter of eye, 22 in number. Maxillary barbel with a distinct marginal membrane at the base, slightly longer than head; mandibular barbels with tubercular ramifications, outer twice as long as inner. Gill-opening not extending downwards beyond root of pectoral spine. Occipito-nuchal shield finely granulate, with rounded posterior processes. Humeral process granulate and striate, much longer than broad, acutely pointed. Dorsal I 7; spine striated, not serrated in front, as long as head. Adipose dorsal $4\frac{1}{2}$ times as long as deep, $1\frac{1}{4}$ times as long as its distance from rayed dorsal. Anal III 8. Pectoral spine shorter than that of dorsal, outer border moderately serrated, inner strongly. Ventral reaching origin of anal. Caudal deeply notched. Caudal peduncle nearly as long as deep. Dark brown above and beneath; fins dark grey, whitish at the base, without spots.

Total length 145 millim.

South Cameroon.—Types in Berlin Museum.

Very closely allied to *S. soloni*. Eye smaller, caudal peduncle a little longer, and no spots on the fins.

43. SYNODONTIS ALBERTI, Schilth.

Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 40.

44. SYNODONTIS BATESII, Blgr.

Add:—

15–17. Ad. & yg.	Akonolinga, Nyong R.	G. L. Bates, Esq. (C.).

46. SYNODONTIS GELEDENSIS, Gthr.

Add :—

2. Ad. Eusso Nyiro, near Lorian Swamp. A. B. Percival, Esq. (P.).

50. SYNODONTIS NUMMIFER, Blgr.

Steind. Denkschr. Ak. Wien, lxxxix. 1913, p. 40, pl. vii.

51. SYNODONTIS SOREX, Gthr.

Pellegr. Poiss. Bass. Tchad, p. 110, pl. x. fig. 2 (1914).

52. SYNODONTIS PLEUROPS, Blgr.

Steind. t. c. p. 41.

53. SYNODONTIS DECORUS, Blgr.

Steind. t. c. p. 42.

54. SYNODONTIS CLARIAS, L.

Pellegr. op. cit. p. 111, pl. x. fig. 3.

Add :—

30–35. Yg. Deert, mouth of Gurara R., Niger. J. J. Simpson, Esq. (P.).

And erase one of the specimens (29) from Nianimaru, Gambia, which is referred to the following species :—

54 *a*. SYNODONTIS ANNECTENS.

Boulenq. Ann. & Mag. N. H. (8) viii. 1911, p. 56.

Intermediate between *S. sorex* and *S. clarias*. Agreeing with the former in the length of the snout, which is more than $\frac{1}{2}$ length of head and 3 times diameter of eye in adult, with the latter in the maxillary barbel. Further differs from *S. clarias* in having the spine of the dorsal fin perfectly smooth in front and the serration on the inner side of the pectoral spine much more feeble in the adult.

Total length 270 millim.

Gambia and Portuguese Guinea.

1. Type.	Nianimaru, Gambia.	J. S. Budgett, Esq. (P.).
2. Type.	Culufi R. at Bafata, Portug. Guinea.	Dr. W. J. Ansorge (C.).
3. Type.	Culufi R. above	..
4. Type.	Geba R. at	..

56. SYNODONTIS BATENSODA, Rüpp.

Pellegr. Poiss. Bass. Tchad, p. 112, pl. x. fig. 4 (1914).

Add :—

27–46. Yg.	Deert, mouth of Gurara R., Niger.	J. J. Simpson, Esq. (P.).

57. SYNODONTIS MEMBRANACEUS, Geoffr.

Pellegr. op. cit. p. 113, fig.

Add :—

24–33. Yg.	Deert, mouth of Gurara R., Niger.	J. J. Simpson, Esq. (P.).

31. **EUCHILICHTHYS,** Blgr.

3*a*. EUCHILICHTHYS HABERERI.

Steind. Anz. Ak. Wien, 1912, p. 447, and Denkschr. Ak. Wien, lxxxix, 1913, p. 45, pl. i. fig. 2.

? *Atopochilus savorgnani*, Pappenh. Mitth. Zool. Mus. Berl. v. 1911, p. 525, fig.

Body feebly compressed, its depth $3\frac{3}{5}$ times in total length. Head large, moderately depressed, rugose above, $1\frac{1}{4}$ times as long as broad, its length $2\frac{3}{4}$ times in total length; snout rounded, a little more than twice as long as postocular part of head; nostrils nearer end of snout than eye, the diameter of which is $6\frac{3}{5}$ times in length of head and 3 times in interorbital width; buccal cleft straight, $\frac{2}{5}$ length of head; mandibular teeth with rounded crowns; lateral barbels longer than eye. Dorsal I 6; spine strong and smooth, $\frac{1}{2}$ length of head. Adipose dorsal longer than deep, much shorter than its distance from the rayed dorsal. Anal III 7. Pectoral spine $\frac{4}{5}$ length of head, inner border serrated. Ventral extending beyond origin of anal. Caudal deeply emarginate. Caudal peduncle as long as deep. Body with small dark brown spots; dorsal fin with a dark cross-band; a black spot at the end of each caudal lobe.

Total length 112 millim.

Ja River (Congo System), South Cameroon.—Type in Vienna Museum.

Closely allied to *E. dybowskii*. Eye smaller, pectoral spine longer, adipose dorsal fin shorter.

40. **MALOPTERURUS**, Lacep.

1. MALOPTERURUS ELECTRICUS, Gmel.

Pietschmann, Jahresb. Nass. Ver. Nat. lxvi. 1913, p. 176 ; Pellegr. Poiss. Bass. Tchad, p. 115, pl. x. fig. 5 (1914) ; Pappenh. in Schubotz, Wiss. Ergebn. Deutsch. Z.-Afr. Exped., Zool. iii. p. 252 (1914).

Recorded by Pappenheim from Lake Albert.

Add :—

84. Ad.	Geba R. at Bafata, Portug. Guinea.	Dr. W. J. Ansorge (C.).
85. Ad.	Luali R. (Chiloango) at Buco Zau.	,,
86. Ad.	Chiloango R. at Mayili.	,,
87. Hgr.	Sankuru R. at Kondue, Kasai.	M. E. Luja (C.) ; Luxemburg Museum (P.).
88–89. Yg.	Pujehun, Sierra Leone.	N. W. Thomas, Esq. (P.).

VOL. III.

Fam. CYPRINODONTIDÆ.

3. **FUNDULUS**, Lacep.

15. FUNDULUS SJOESTEDTI, Lönnb.

Add :—

14–17. Ad.	Maka, Sierra Leone.	N. W. Thomas, Esq. (P.).

4. **HAPLOCHILUS**, McClell.

6. HAPLOCHILUS CAMERONENSIS, Blgr.

Add :—

44–53. Ad.	Calabar.	Dr. R. T. Leiper (P.).

12. HAPLOCHILUS FASCIOLATUS, Gthr.

Add :—

17–18. Ad. & hgr.	Maka, Sierra Leone.	N. W. Thomas, Esq. (P.).
19. Ad.	N. Sherbo district, Sierra Leone.	„
20. Ad.	Kenema, „	„
21–22. Ad.	Victoria, „	„

22. HAPLOCHILUS SPILAUCHEN, A. Dum.

Add :—

39–42. Ad. & hgr.	N. Sherbo district, Sierra Leone.	N. W. Thomas, Esq. (P.).

28. HAPLOCHILUS MACRURUS, Blgr.

Add :—

14. Ad.	Maka, Sierra Leone.	N. W. Thomas, Esq. (P.).
15. Hgr.	N. Sherbo district, Sierra Leone.	„

40. HAPLOCHILUS BIFASCIATUS, Stdr.

Add :—

5. Ad.	Pujehun, Sierra Leone.	N. W. Thomas, Esq. (P.).

41 *a*. HAPLOCHILUS ANNULATUS.

Bouleng. Ann. & Mag. N. H. (8) xv. 1915, p. 203.

Depth of body $4\frac{1}{3}$ to 5 times in total length, length of head $3\frac{1}{2}$ times. Head flat above; snout a little shorter than eye; mouth directed upwards, lower jaw projecting; eye $2\frac{2}{3}$ times in length of head, $1\frac{1}{3}$ times in interorbital width; præorbital very narrow. Dorsal 7, originating twice as far from occiput as from root of caudal, above posterior third or fourth of anal, produced, longest ray as long as head. Anal 12–13, produced like the dorsal. Pectoral a little shorter than head, extending beyond base of ventral; latter small. Caudal pointed, median

Fig. 189.

Haplochilus annulatus.
Type. × 2.

rays produced, longer than head. Caudal peduncle $1\frac{2}{3}$ times as long as deep. 28 or 29 scales in longitudinal series, 22 round body; lateral line represented by an interrupted series of pits. Lemon-yellow, with four broad black rings, the first round the head, the last round the caudal peduncle; dorsal and anal yellow and black; caudal orange, with two dark purple longitudinal lines.

Total length 16 millim.

Sierra Leone.

1–2. Types.	Maka.	N. W. Thomas, Esq. (P.).
3. Ad.	Bo.	,,
4–5. Hgr.	N. Sherbo district.	,,
6–12. Ad. & hgr.	Victoria.	,,

Appears most nearly related to *H. chevalieri*.

Fam. SERRANIDÆ.

4. **AMBASSIS**, C. & V.

1. AMBASSIS COMMERSONII, C. & V.

Add :—

14–33. Ad., hgr., & yg.	Fresh-water stream at Bububa, opposite Zanzibar.	Dr. W. M. Aders (P.).

Fam. SCORPIDIDÆ.

1. **PSETTUS**, C. & V.

3. PSETTUS SEBÆ, C. & V.

Add :—

27–28. Hgr.	Victoria, Sierra Leone.	N. W. Thomas, Esq. (P.).

Fam. CICHLIDÆ.

1. **TILAPIA**, A. Smith.

5. TILAPIA MOSSAMBICA, Peters.

Add :—

9. Ad.	Winkle Spruit, Natal.	Romer Robinson, Esq. (P.).

7. TILAPIA NATALENSIS, M. Web.

Add :—

72. Yg.	Kafue R., N. Rhodesia.	L. C. Heath, Esq. (P.).

10. TILAPIA NILOTICA, L.

Pellegr. Poiss. Bass. Tchad, p. 130, pl. xi. fig. 3 (1914).

Add :—

345–346. Yg.	Isuvo R., Brit. E. Africa.	S. L. Hinde, Esq. (P.).

13. TILAPIA GALILÆA, Art.

Pellegr. op. cit. p. 131, pl. xi. fig. 4.

15. TILAPIA HEUDELOTI, A. Dum.

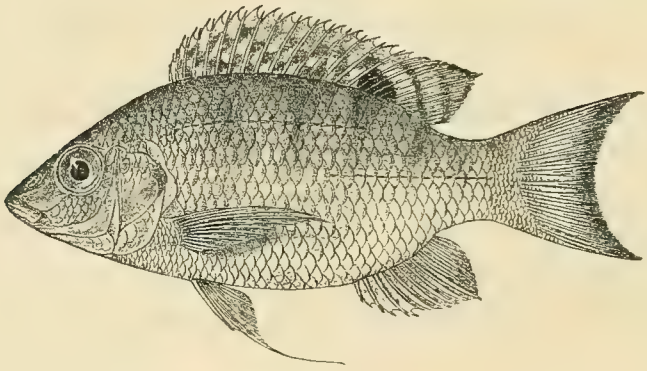
Pellegr. op. cit. p. 132, pl. xi. fig. 2.

15*a*. TILAPIA CAUDOMARGINATA, sp. n.

Depth of body $2\frac{1}{3}$ times in total length, length of head 3 times. Head $2\frac{1}{3}$ times as long as broad; snout rounded, with convex upper profile, as long as broad, a little shorter than postocular part of head; eye $3\frac{1}{3}$ to $3\frac{1}{2}$ times in length of head, equal to interorbital width and a

little greater than præorbital depth; mouth rather small, $\frac{1}{2}$ width of head, extending a little beyond vertical of nostril; teeth with very slender shafts, in 3 series, 60 to 64 in outer series of upper jaw; 3 series of scales on the cheek, width of scaly part less than diameter of eye. Gill-rakers rather short, 16 to 18 on lower part of anterior arch. Dorsal XVI 13; spines equal from the sixth, not quite $\frac{1}{2}$ length of head; longest soft rays $\frac{1}{2}$ length of head. Anal III 12; third spine $\frac{1}{3}$ length of head. Pectoral as long as head, nearly reaching vertical of origin of anal. Ventral produced into a filament, extending a little beyond origin of anal. Caudal with deep, crescentic emargination. Caudal peduncle deeper than long. Scales cycloid, 33–35 $\frac{3\frac{1}{2}}{12-13}$; lateral lines $\frac{20}{15}$. Golden, brownish on the back with faint traces of darker bars; a blackish opercular spot; dorsal fin with blackish streaks and marblings,

Fig. 190.



Tilapia caudomarginata.
Type.

and a large black spot on the anterior soft rays; caudal broadly edged with blackish.

Total length 78 millim.

Sierra Leone.

1–2. Types. N. Sherbo district. N. W. Thomas, Esq. (P.).

Distinguished from the young of *T. heudeloti* by smaller scales, more numerous anal rays, and the deeply emarginate caudal.

17. TILAPIA MACROCEPHALA, Blkr.

Add :—

65. Ad. Maka, Sierra Leone. N. W. Thomas, Esq. (P.).

30. TILAPIA MELANOPLEURA, A. Dum.

Pellegr. Poiss. Bass. Tchad, p. 134, fig. (1914).

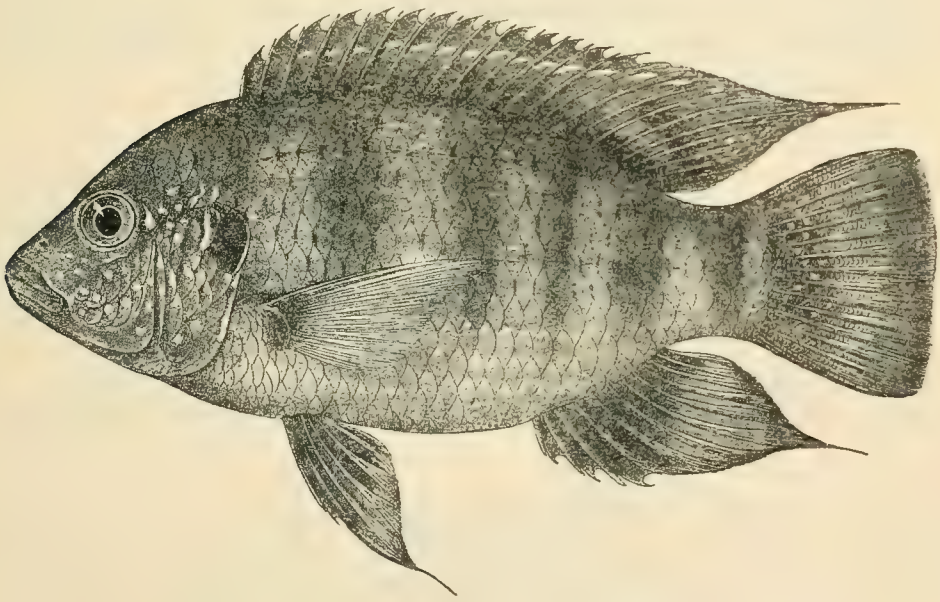
Add:—

146–155. Ad. & yg.	N. Sherbo district, Sierra Leone.	N. W. Thomas, Esq. (P.).
156. Yg.	Victoria, Sierra Leone.	,,
157–158. Hgr. & yg.	Sabi R., Transvaal.	S. African Museum (P.).

34. TILAPIA ZILLII, Gerv.

Pellegr. op. cit. p. 133, fig.

Fig. 191.



Tilapia margaritacea.
Type. $\frac{5}{6}$.

41 *a*. TILAPIA MARGARITACEA, sp. n.

Depth of body 2 to $2\frac{1}{4}$ times in total length, length of head $2\frac{3}{4}$ to 3 times. Head $1\frac{3}{4}$ to 2 times as long as broad; snout with straight or slightly concave upper profile, broader than long, as long as or a little longer than eye, a little shorter than postocular part of head; eye 3 (young) to 4 times in length of head, $\frac{3}{5}$ to $\frac{4}{5}$ interorbital width, equal to or a little more than depth of præorbital; mouth $\frac{3}{5}$ to $\frac{2}{3}$ width of head, extending to between nostril and eye; teeth small, in 3 or 4 series,

40 (young) to 54 in outer series of upper jaw; 2 or 3 series of scales on the cheek, width of scaly portion equal to or a little less than diameter of eye. Gill-rakers short, 8 or 9 on lower part of anterior arch. Dorsal XIV 12; last spine longest, about $\frac{1}{2}$ length of head; longest soft rays at least $\frac{3}{4}$ length of head, middle rays produced and a little longer than head in adult. Anal III 8–9; third spine a little shorter but stronger than last dorsal. Pectoral as long as or a little longer than head, reaching vertical of origin of anal. Ventral reaching origin of anal. Caudal truncate. Caudal peduncle a little deeper than long. Scales cycloid, 28–30 $\frac{2\frac{1}{2}}{10-11}$; lateral lines $\frac{18-20}{9-12}$. Dark olive, with five rather indistinct blackish cross-bands; a black opercular spot; sides of head and of lower half of body with mother-of-pearl spots in the adult; fins dark olive, soft dorsal and caudal with more or less numerous small round whitish spots; a whitish streak along the spinous dorsal.

Total length 160 millim.

South Cameroon.

1–4. Types. Nyong R. at Akonolinga. G. L. Bates, Esq. (C.).

Distinguished from *T. sparrmani* by the larger head and the longer pectoral fin.

49. TILAPIA BUETTIKOFERI, Hubr.

Add:—

15–16. Ad. N. Sherbo district, Sierra Leone. N. W. Thomas, Esq. (P.).

10. **HAPLOCHROMIS**, Pfeff.

13. HAPLOCHROMIS MOFFATI, Casteln.

Add:—

55–58. Ad. & hgr. Solwezi R., N. Rhodesia. F. H. Melland, Esq. (P.).

14. HAPLOCHROMIS DESFONTAINESII, Lacep.

Astatotilapia desfontainesi, Pellegr. Poiss. Bass. Tchad, p. 128, fig. (1914).

11. **PARATILAPIA**, Blkr.

13. PARATILAPIA THUMBERGII, Casteln.

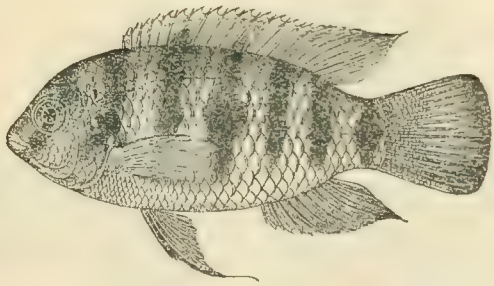
? *Pelmatochromis genisquamulatus*, Pellegr. Bull. Soc. Zool. France, xxxix. 1914, p. 27.

31 *a*. PARATILAPIA THOMASI.

Bouleng. Ann. & Mag. N. H. (8) xv. 1915, p. 204.

Depth of body 2 to $2\frac{1}{3}$ times in total length, length of head $2\frac{3}{4}$ to $3\frac{1}{4}$ times. Head twice as long as broad; snout with convex upper profile, broader than long, $\frac{1}{2}$ to $\frac{3}{5}$ postocular part of head; eye $3\frac{1}{3}$ to $3\frac{1}{2}$ times in length of head, 1 to $1\frac{1}{3}$ times in interorbital width, greater than præorbital depth; mouth rather small, extending to between nostril and eye; præmaxillary processes short; teeth small, in 3 or 4 series; 3 or 4 series of scales on the cheek, width of scaly part a little less than diameter of eye. Gill-rakers short, 7 or 8 on lower part of anterior arch. Dorsal XIV 9–10; spines increasing in length to the last, which measures $\frac{2}{5}$ to $\frac{1}{2}$ length of head; longest soft ray nearly as long as head. Anal III 7–8; third spine a little shorter than last dorsal. Pectoral a little shorter than head, not extending to vertical of

Fig. 192.



Paratilapia thomasi.
Type.

origin of anal. Ventral much produced, extending beyond origin of anal. Caudal rounded. Caudal peduncle deeper than long. Scales very feebly denticulate, 25–27 $\frac{2}{10}$; lateral lines $\frac{15\text{–}16}{6\text{–}10}$. Yellowish, with six black cross-bands, the third of which may expand into a rhombic spot; a black bar from the eye to the mouth; a black opercular spot, with or without small pearl-white spots; dorsal and anal fins grey, the former edged with white; outer rays of ventral black.

Total length 65 millim.

Sierra Leone.

1–3. Types.	Maka.	N. W. Thomas, Esq. (P.).
4–5. Ad.	N. Sherbo district.	,,

Appears most nearly related to *P. dorsalis*. As in *P. codringtoni*, the maxillary bone is concealed when the mouth is closed, the fish having the appearance of a *Tilapia*.

13. **PELMATOCHROMIS**, Stdr.

2. PELMATOCHROMIS JENTINKI, Stdr.

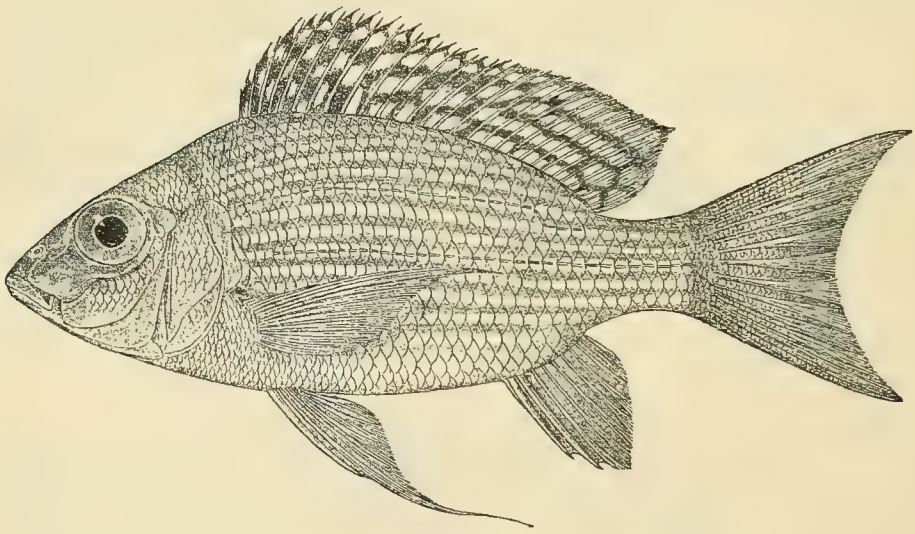
Add :—

5–6. Yg. N. Sherbo district, Sierra Leone. N. W. Thomas, Esq. (P.).

2 *a*. PELMATOCHROMIS INTERMEDIUS, sp. n.

Depth of body $2\frac{3}{5}$ to 3 times in total length, length of head 3 times. Head twice as long as broad ; snout rounded, with convex upper profile, as long as broad, as long as eye, which is 3 times in length of head and equals or a little exceeds interorbital width or præorbital depth ; mouth rather small, extending to between nostril and eye ; teeth very small,

Fig. 193.



Pelmatochromis intermedius.
Type.

in 3 series, about 50 in outer series of upper jaw ; 3 series of scales on the cheek, width of scaly part much less than diameter of eye. Gill-rakers short and broad, 12 or 13 on lower part of anterior arch. Dorsal XIV 15–17 ; spines rather slender, rapidly increasing in length to the fifth or sixth, which measures $\frac{1}{2}$ length of head, then subequal or slightly decreasing in length ; longest soft rays $\frac{2}{5}$ to $\frac{1}{2}$ length of head. Anal III 7–9 ; spines much stronger than dorsals, third $\frac{1}{2}$ length of head. Pectoral as long as or a little longer than head, reaching vertical

of origin of anal. Ventral produced into a filament, reaching beyond origin of anal. Caudal feebly scaled, deeply emarginate. Caudal peduncle as long as deep. Scales cycloid, 39–40 $\frac{4\frac{1}{2}-5}{\frac{2}{12-14}}$; lateral lines $\frac{28-30}{34-35}$, lower extending to above the axil. Silvery, with golden longitudinal lines running between the series of scales; young with irregular dark brown cross-bars; dorsal fin with blackish markings which form a wide network on the spinous part and four longitudinal streaks on the soft; pectoral and ventral fins yellow.

Total length 110 millim.

Sierra Leone.

1–2. Types. N. Sherbo district. N. W. Thomas, Esq. (P.).

Very closely allied to *P. jentinki*. Intermediate between it and *P. lateralis* in the scale-formula.

7. PELMATOCHROMIS BUETTIKOFERI, Stdr.

Add:—

5. Ad. N. Sherbo district, Sierra Leone. N. W. Thomas, Esq. (P.).
6. Hgr. Victoria, ,, ,,

10. PELMATOCHROMIS CAUDIFASCIATUS, Blgr.

Add:—

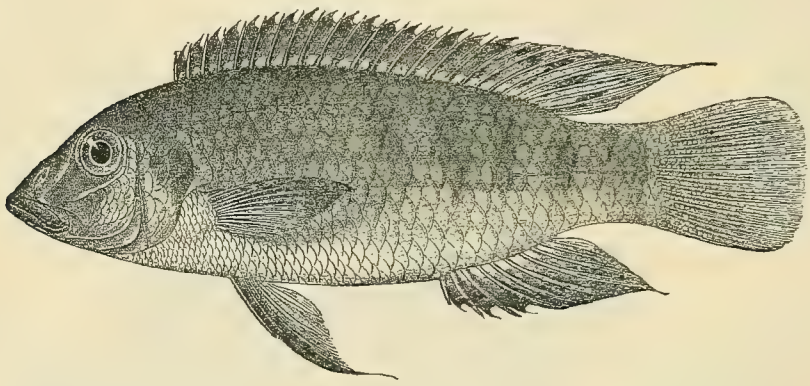
21. Hgr. Nyong R. at Akonolinga. G. L. Bates, Esq. (C.).

14 *a*. PELMATOCHROMIS HUMILIS, sp. n.

Depth of body equal to length of head, 3 to $3\frac{1}{6}$ times in total length. Head a little over twice as long as broad; snout obtusely pointed, with curved upper profile, a little longer than broad, twice as long as eye in adult; eye $3\frac{1}{2}$ (young) to $4\frac{1}{3}$ times in length of head and equal to interorbital width or least præorbital depth; mouth rather narrow, extending to between nostril and eye; teeth in a single series, with a few minute teeth behind it at the symphysis; 40 (young) to 60 teeth in the series in the upper jaw; 3 series of scales on the cheek, width of scaly part less than diameter of eye. Gill-rakers short, tubercular, 12 on lower part of anterior arch. Dorsal XVII 11; spines increasing in length to the last, which measures $\frac{2}{3}$ length of head; middle soft ray produced

into a filament, nearly as long as head. Anal III 7–8, third spine as long as last dorsal. Pectoral $\frac{2}{3}$ length of head, widely separated from anal. Ventral produced into a filament, reaching origin of anal. Caudal rounded. Caudal peduncle as long as deep. Scales cycloid, 30 $\frac{2\frac{1}{2}}{11}$; lateral lines $\frac{20-21}{8-10}$. Brown above, tinged with crimson, yellowish beneath; faint traces of dark bars on the body; a black opercular spot; spinous dorsal, anterior part of anal, and outer rays of ventral dark

Fig. 194.



Pelmatochromis humilis.
Type.

purplish brown; soft dorsal paler, with a few large dark spots; a series of whitish spots at the base of the dorsal in the adult.

Total length 105 millim.

Sierra Leone.

1. Type.	N. Sherbo district.	N. W. Thomas, Esq. (P.).
2. Yg.	Pujehun.	,,

Closely allied to *P. kingsleyæ*. Body less deep, snout narrower, and dorsal spines more numerous.

18. PELMATOCHROMIS PULCHER, Blgr.

Add:—

22–24. Ad. & yg.	N. Sherbo district, Sierra Leone.	N. W. Thomas, Esq. (P.).
25–27. Hgr. & yg.	Pujehun, Sierra Leone.	..
28–30. Ad. & hgr.	Victoria, ,,	..

15. **HEMICHROMIS**, Peters.

1. HEMICHROMIS FASCIATUS, Peters.

Add :—

124–126, 127–129. Ad. & yg.	N. Sherbo district, Sierra Leone.	N. W. Thomas, Esq. (P.).

The very young (25 millim.) has a broad black lateral band, and a narrow black streak along each side of the back, with mere indications of the cross-bars.

2. HEMICHROMIS BIMACULATUS, Gill.

Add :—

127–129. Ad.	N. Sherbo district, Sierra Leone.	N. W. Thomas, Esq. (P.).
130–133. Ad. & hgr.	Victoria, Sierra Leone.	,,

VOL. IV.

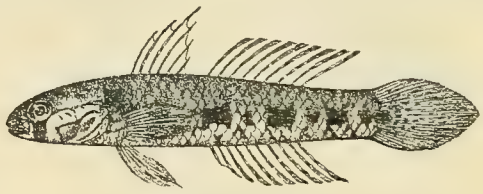
Fam. GOBIIDÆ.

2. GOBIUS, Art.

3 *a*. GOBIUS THOMASI, sp. n.

Body feebly compressed. Depth of body $4\frac{1}{2}$ times in total length, length of head 4 times. Head $1\frac{1}{2}$ times as long as broad, scaly above from between the eyes, naked on the sides; snout rounded, shorter than eye, which is $3\frac{1}{2}$ to $3\frac{2}{3}$ times in length of head; interorbital space very narrow; jaws equal in front; mouth extending to below anterior border of eye; teeth rather small, in a narrow band. Dorsals VI 9, well separated from each other; third simple ray somewhat produced, a

Fig. 195.



Gobius thomasi.
Type. × $1\frac{1}{3}$.

little shorter than head. Anal I 9, opposite second dorsal. Pectoral a little shorter than head. Ventral not reaching vent, with a rather narrow basal membrane. Caudal rounded-subacuminate, as long as head. Caudal peduncle $1\frac{1}{2}$ times as long as deep. Scales feebly ciliated, 26–27 in longitudinal series, 8 in transverse series. Pale olive-brown, with small dark brown spots and a lateral series of large blackish spots; a large black spot above base of pectoral; blackish wavy lines on the cheek and gill-cover; a black crescentic band from eye to eye across the gular region.

Total length 50 millim.

Sierra Leone.

1–2. Types. N. Sherbo district. N. W. Thomas, Esq. (P.).

Agrees with *G. dewaalii* in the large scales; differs in the position of the mouth, the absence of canine teeth, the naked gill-cover, and the larger eye.

INDEX TO THE FOUR VOLUMES.

abadii (Gnathonemus), i. 118.
abbreviata (Polycentropsis), iii. 100.
abbreviatus (Mormyrops), i. 110.
„ (Mormyrus), i. 110.
ablabes (Barbus), ii. 156.
„ (Puntius), ii. 156.
aboinensis (Barbus), iv. 268.
Abrostomus, i. 300.
„ capensis, i. 340.
„ umbratus, i. 339.
abyssinica (Dillonia), i. 356.
abyssinicus (Nemachilus), ii. 217.
acanthomias (Synodontis), ii. **400**; iv. 315.
Acanthopodus, iii. 119.
„ argenteus, iii. 121.
Acanthopterygii, iii. 89.
Acapoëta, iv. 212.
Acerina zillii, iii. 197.
aculeatus (Gastrosteus), iv. 107.
acuticaudatus (Haplochilus), iii. 72.
acuticeps (Auchenoglanis), iv. 310.
„ (Tilapia), iii. 218.
acutidens (Alestes), i. 224.
„ (Brachyalestes), i. 224.
„ (Micralestes), i. 224.
acutipinne (Sicydium), iv. 44.
acutipinnis (Cotylopus), iv. 44.
„ (Sicydium), iv. 44.
acutirostre (Ctenopoma), iv. 67.
acutirostris (Anguilla), iii. 5.
„ (Chrysichthys), ii. **319**; iv. 299.
„ (Pellonula), i. 159.
acutivelis (Arius), ii. 322.
adansonii (Bagrus), ii. 283.
„ (Eutropius), ii. 283.
„ (Heterotis), i. 149.
„ (Sudis), i. 149.
adolphi-frederici (Tilapia), iii 220.
adspersus (Marcusenius), i. 70.
„ (Mormyrus), i. 70.
ægyptia (Atherina), iv. 75.
ægyptiaca (Anguilla), iii. 5.
ægyptiacus (Salmo), i. 273, 275.
æneofuscus (Gobius), iv. **30**, 31.
æthiopicus (Protopterus), i. **21**; iv. 152.
afer (Barbus), ii. 178.
„ (Hemichromis), iii. 325.
„ (Notopterus), i. **146**; iv. 170.
„ (Symbranchus), iii. 2.
affinis (Alestes), i. **208**; iv. 180.
„ (Barbus), ii. 47.
„ (Brachyalestes), i. 208.
„ (Chromis), iii. 190.
„ (Distichodus), i. 260.
„ (Malapterurus), ii. 512.
„ (Mormyrus), i. 88.
„ (Petrocephalus), i. 88.
„ (Tilapia), iii. 190.
afra (Paratilapia), iii. 325.
„ (Sphyræna), iv. 105.
africana (Eleotris), iv. 17.
africanus (Arius), ii. 389.
„ (Chonerhinus), iv. 148.
„ (Ophiocephalus), iv. 69.
afro-fischeri (Synodontis), ii. **425**, 452.
agnus (Mormyrus), i. 128.
Agonostoma, iv. 99.
„ dobuloides, iv. 99.
„ telfairii, iv. 99.
Agonostomus, iv. 99.
„ telfairii, iv. 99.
ahlselli (Barbus), iv. 231.
Ailia somalensis, ii. 301.
akakianus (Barbus), ii. 122.
alaotrensis (Atherina), iv. 76.
Alausa vulgaris, i. 154.
alberti (Synodontis), ii. **454**; iv. 321.
albini (Ectodus), iii. 450.

albula (Mugil), iv. 80.
Alburnus alexandrinus, ii. 193.
,, callensis, ii. 188.
,, niloticus, ii. 193.
alcalica (Tilapia), iii. 188.
Alestes, i. 190.
,, acutidens, i. 224.
,, affinis, i. **208**; iv. 180.
,, ansorgii, iv. 176.
,, baremose, i. **195**; iv. 176.
,, batesii, i. **221**; iv. 184.
,, bimaculatus, i. 213.
,, brevipinnis, i. 227.
,, brevis, i. 222.
,, chaperi, i. **203**; iv. 179.
,, dentex, i. **193**; iv. 176.
,, fuchsii, i. 209.
,, grandisquamis, i. 220.
,, hasselquistii, i. 193, 195.
,, holargyreus, i. 227.
,, humilis, i. 211.
,, imberi, i. 208, **209**; iv. 181.
,, intermedius, i. **201**; iv. 178.
,, jacksonii, iv. 180.
,, kingsleyæ, i. **212**; iv. 181.
,, kotschyi, i. 195.
,, lateralis, i. **204**; iv. 179.
,, lemairii, i. 209.
,, leuciscus, i. 206.
,, liebrechtsii, i. 198.
,, longipinnis, i. **202**, 203, 236; iv. 178.
,, macrolopidotus, i. **217**, 218, 222; iv. 184.
,, macrophthalmus, i. **197**; iv. 176.
,, natalensis, i. 204.
,, nurse, i. **205**; iv. 179.
,, opisthotænia, i. **215**; iv. 182.
,, poptæ, i. 216.
,, rhodopleura, i. 218.
,, ruppellii, i. 206.
,, rutilus, iv. 181.
,, sadleri, i. **200**; iv. 178.
,, schoutedeni, iv. 182.
,, senegalensis, i. **206**; iv. 179.
,, sethente, i. 193.
,, splendens, i. 195.
,, stuhlmanni, i. 199.
,, tæniurus, i. 214.
,, tessmanni, iv. 178.
Alestes tholloni, i. 201.
,, wytsi, i. 195.
alexandrinus (Alburnus), ii. 193.
algeriensis (Gasterosteus), iv. 107.
,, (Syngnathus), iii. 88.
Allabenchelys, ii. 266.
,, brevior, ii. 266.
,, laticeps, iv. 288.
,, longicauda, ii. **267**; iv. 288.
alluaudi (Astatoreochromis), iii. 305.
,, (Barbus), iv. 248.
,, (Clarias), ii. 253.
,, (Haplochromis), iii. 305.
Alosa, i. 153.
,, finta, i. 154.
alosa (Clupea), i. 154.
alozoides (Liza), iv. 84.
alpestris (Blennius), iv. 109.
altianalis (Barbus), ii. 36.
alticola (Barbus), ii. 55.
Alticus, iv. 110.
,, aspilus, iv. 111.
,, monochrous, iv. 111.
altidorsalis (Barbus), ii. 101.
altipinnis (Auchenoglanis), ii. **372**; iv. 311.
,, (Eutropius), ii. 283.
altivelis (Labeo), i. **309**; iv. 198.
altus (Barbus), ii. 117.
,, (Barilius), iv. 277.
,, (Distichodus), i. **261**; iv. 193.
,, (Micralestes), i. 230.
Ambassis, iii. 111.
,, commersonii, iii. **112**; iv. 326.
,, macracanthus, iii. 112.
,, productus, iii. 112.
ambassis (Centropomus), iii. 112.
amblodon (Anguilla), iii. 9.
Amblyopus, iv. 41.
amblystoma (Mormyrus), i. 52.
amphibia (Rhinocryptis), i. 20.
amphibius (Protopterus), i. 20.
amphigramma (Barbus), ii. 145.
Amphilius, ii. 353; iv. 306.
,, angustifrons, ii. 362.
,, atesuensis, ii. **360**; iv. 309.
,, brevis, ii. 361.
,, grammatophorus, iv. 308.
,, grandis, ii. **355**; iv. 306.
,, hargeri, ii. 358.

Amphilius jacksonii, iv. 307.
„ krefftii, ii. 356.
„ lampii, iv. 309.
„ leroyi, ii. 355.
„ longirostris, ii. **359**; iv. 308.
„ nigricaudatus, ii. 361.
„ oxyrhynchus, iv. 306.
„ platychir, ii. **357**, 360.
„ uranoscopus, ii. **354**, 355, 357.
amphimelas (Tilapia), iii. 188.
amplexicauda (Clarias), ii. 261.
Anabantidæ, iv. 47.
Anabas, iv. 48.
„ ansorgii, iv. 59.
„ bainsii, iv. 52.
„ capensis, iv. 50.
„ congicus, iv. 57.
„ fasciolatus, iv. 60.
„ kingsleyæ, iv. 62.
„ maculatus, iv. 58, **65**.
„ multispinis, iv. 53.
„ muriei, iv. 64.
„ nanus, iv. 58.
„ nigropannosus, iv. 55.
„ ocellatus, iv. 67.
„ oxyrhynchus, iv. 65, **66**.
„ pellegrini, iv. 54.
„ petherici, iv. **61**, 64.
„ pleurostigma, iv. 65.
„ scandens, iv. 53.
„ vicinus, iv. 51.
„ weeksii, iv. 65, 67.
Ancharius, ii. 378.
„ brevibarbis, ii. 380.
„ fuscus, ii. 379.
anchietæ (Mormyrus), i. **129**; iv. 167.
Andersonia, ii. 510.
„ leptura, ii. 510.
andersonii (Chromys), iii. 171.
„ (Petrochromis), iii. 269.
„ (Tilapia), iii. 171.
andreæ (Chromis), iii. 197.
aneitensis (Anguilla), iii. 6.
anema (Barbus), ii. **182**; iv. 272.
angelicus (Synodontis), ii. **440**; iv. 320.
angolensis (Clarias), ii. **250**; iv. 284.
„ (Doumea), ii. 497.
„ (Gnathonemus), i. **109**; iv. 165.
„ (Hemichromis), iii. 408.
angolensis (Kneria), i. **170**; iv. 174.
„ (Pelmatochromis), iii. 408.
Anguilla, iii. 3.
„ acutirostris, iii. 5.
„ ægyptiaca, iii. 5.
„ amblodon, iii. 9.
„ aneitensis, iii. 6.
„ australis, iii. 9.
„ bengalensis, iii. 7.
„ bicolor, iii. 9.
„ callensis, iii. 5.
„ canariensis, iii. 5.
„ capensis, iii. 6.
„ celebensis, iii. 6.
„ delalandii, iii. 6.
„ elphinstonei, iii. 7.
„ hildebrandti, iii. 8.
„ johannæ, iii. 7.
„ labiata, iii. 6, 7.
„ latirostris, iii. 5.
„ macrophthalma, iii. 7.
„ mauritiana, iii. 7.
„ mossambica, iii. 6.
„ nilotica, iii. 5.
„ virescens, iii. 6, 9.
„ vulgaris, iii. 4.
anguilla (Muræna), iii. 4.
anguillaris (Clarias), ii. **226**, 231; iv. **281**.
„ (Heterobranchus), ii. 235.
„ (Macropteronotus), ii. 226.
„ (Platystacus), ii. 278.
„ (Plotosus), ii. **278**; iv. 290.
„ (Silurus), ii. 226, 235.
„ (Tribranchus), iii. 6.
Anguillidæ, iii. 3.
anguilliformis (Protopterus), i. 20.
anguilloides (Marcusenius), i. 34.
„ (Mormyrops), i. 34.
„ (Mormyrus), i. 34.
angusticeps (Paratilapia), iii. 320.
angustifrons (Amphilius), ii. 362.
„ (Anoplopterus), ii. 362.
„ (Haplochromis), iii. 292.
„ (Lates), iii. 109.
anna-carolina (Mugilomorus), i. 25.
annectens (Labeo), i. **336**; iv. 205.
„ (Lepidosiren), i. 20, 21.
„ (Pelmatochromis), iii. 405.
„ (Protopterus), i. **20**, 21; iv. 151.

annectens (Synodontis), iv. 322.
„ (Tropheus), iii. 278.
annulatus (Haplochilus), iv. 326.
Anoplopterus, ii. 353.
„ angustifrons, ii. 362.
„ longirostris, ii. 359.
„ platychir, ii. 357.
„ uranoscopus, ii. 354.
anoplus (Barbus), ii. **177**; iv. 272.
Ansorgia, iv. 294.
„ vittata, iv. 295.
ansorgii (Alestes), iv. 176.
„ (Anabas), iv. 59.
„ (Barbus), ii. 126.
„ (Barilius), iv. 278.
„ (Chrysichthys), iv. 300.
„ (Citharidium), i. 289.
„ (Distichodus), iv. 194.
„ (Eutropius), iv. 291.
„ (Gobioides), iv. 42.
„ (Haplochilus), iii. 53.
„ (Labeo), i. **341**; iv. 210.
„ (Marcusenius), i. **73**; iv. 161.
„ (Mastacembelus), iv. 122.
„ (Nannocharax), iv. 195.
„ (Nematogobius), iv. 40.
„ (Neolebias), iv. 191.
„ (Odaxothrissa), iv. 172.
„ (Parauchenoglanis), iv. 309.
„ (Pelmatochromis), iii. 406.
„ (Petersius), iv. 185.
„ (Petrocephalus), i. **51**; iv. 154.
„ (Phractolæmus), i. 168.
„ (Phractura), ii. 504.
„ (Physailia), iv. 296.
„ (Polypterus), iv. 149.
„ (Syngnathus), iii. 87.
„ (Synodontis), iv. 317.
„ (Tilapia), iii. 214.
„ (Varicorhinus), i. 353.
„ (Xenopomatichthys), iv. 174.
anticolus (Blennius), iv. 109.
antinorii (Barbus), ii. 112.
„ (Haplochilus), iii. 44.
antonii (Distichodus), i. 266.
apalike (Elops), i. 28.
Aphanius, iii. 18.
„ fasciatus, iii. 18.
„ nanus, iii. 18.
apleurogramma (Barbus), ii. **144**; iv. 260.
apoda (Tellia), iii. 22.
Apodes, iii. 3.
apogonostomatus (Barbus), iv. 272.
apus (Channallabes), ii. **271**; iv. 289.
„ (Gymnallabes), ii. 271.
arab (Plotosus), ii. 279.
arabi (Synodontis), ii. 404.
arabicus (Chanos), i. 164.
arcislongæ (Barbus), ii. **169**; iv. 269.
Arelia, iv. 5.
„ senegalensis, iv. 6.
arge (Kuhlia), iii. 95.
argentatus (Cristiceps), iv. 111.
argentea (Neobola), ii. 212.
„ (Perca), iii. 95.
argenteus (Acanthopodus), iii. 121.
„ (Barbus), ii. 169.
„ (Chætodon), iii. 121.
„ (Dules), iii. 95.
„ (Engraulicypris), ii. 212.
„ (Monodactylus), iii. 122.
„ (Moronopsis), iii. 95, 96.
„ (Psettus), iii. 120, **121**.
Argentina carolina, i. 25.
„ machnata, i. 25.
argulus (Cœlonotus), iii. 85.
argus (Syngnathus), iii. 85.
argyrotænia (Barbus), iv. 257.
Ariodes, ii. 383.
Arius, ii. 383.
„ acutivelis, ii. 322.
„ africanus, ii. 389.
„ falcarius, ii. 389.
„ gigas, ii. 386.
„ heudeloti, ii. **387**; iv. 315.
„ kirkii, ii. 389.
„ latiscutatus, ii. **385**, 386; iv. 315.
„ madagascariensis, ii. 388.
„ parkii, ii. 385, 387; iv. 315.
arnaudii (Lepidosiren), i. 21.
„ (Polypterus), i. 14.
arnoldi (Fundulus), iii. 30.
„ (Pelmatochromis), iii. 404.
artedii (Polynemus), iv. 100.
ashanteensis (Mugil), iv. 80.
asper (Barbus), ii. 176.
aspilus (Alticus), iv. 111.
„ (Barbus), ii. **181**; iv. 272.
aspius (Barbus), iv. 249.
Asprotilapia, iii. 278.

Asprotilapia leptura, iii. 279.
Astatoreochromis, iii. 284.
„ alluaudi, iii. 305.
Astatotilapia, iii. 284.
„ desfontainesi, iii. 303; iv. 330.
„ guiarti, iii. 336.
„ jeanneli, iii. 291.
„ johnstoni, iii. 249, 250.
„ livingstonii, iii. 286.
„ nigrescens, iii. 296.
„ roberti, iii. 295.
ater (Galeichthys), ii. 382.
atesuensis (Amphilius), ii. **360**; iv. 309.
Atherina, iv. 73.
„ alaotrensis, iv. 76.
„ boieri, iv. 74.
„ caspia, iv. 74.
„ gabonensis, iv. 76.
„ hepsetus, iv. 74.
„ hyalosoma, iv. 74.
„ lacustris, iv. 74.
„ mochon, iv. 74.
„ pontica, iv. 74.
„ riqueti, iv. 74.
„ risso, iv. 74.
„ sarda, iv. 74.
„ sardinella, iv. 74.
„ sikoræ, iv. 76.
Atherinidæ, iv. 73.
atlantica (Capoëta), ii. 87.
atlanticus (Barbus), ii. 87.
Atopocheilichthys, iii. 40.
„ typus, iii. 61.
Atopochilus, ii. 490.
„ guentheri, ii. 487.
„ macrocephalus, ii. 491.
„ savorgnani, ii. **490**; iv. 323.
atripinna (Haplochilus), iii. 69.
atroventralis (Distichodus), i. 267.
attenuatus (Mormyrops), i. 45.
Auchenaspis, ii. 366.
„ biscutatus, ii. 367, 369.
Auchenoglanis, ii. 366.
„ altipinnis, ii. **372**; iv. 311.
„ ballayi, ii. **373**; iv. 312.
„ biscutatus, ii. **367**, 369; iv. 311.
„ gravoti, iv. 312.
„ guttatus, ii. 364.
Auchenoglanis iturii, iv. 311.
„ longiceps, iv. 312.
„ macrostoma, ii. 365.
„ monkei, iv. 311.
„ ngamensis, ii. 371.
„ occidentalis, ii. **369**; iv. 310.
„ pulcher, ii. 373.
„ punctatus, ii. 376.
„ tanganicanus, ii. 369.
„ tchadiensis, ii. 369.
„ ubangensis, ii. 375.
aurantiacus (Barbus), iv. 270.
aurata (Tilapia), iii. 246.
auratus (Bagrus), ii. 325.
„ (Chromis), iii. 246.
„ (Chrysichthys), ii. 324, **325**, 327; iv. 303.
„ (Cyprinus), ii. 218.
„ (Mugil), iv. 84, **86**.
„ (Pimelodus), ii. 325.
„ (Porcus), ii. 325.
„ (Schilbe), ii. 293.
aureus (Barbus), ii. 90.
„ (Chromis), iii. 190.
„ (Labeobarbus), ii. 90.
auriculatus (Xenopomatichthys), i. **172**; 174.
aurita (Otoperca), iii. 130.
„ (Paratilapia), iii. 415.
auritus (Hemichromis), iii. 428.
„ (Larimus), iii. 130.
„ (Pelmatochromis), iii. 415.
„ (Schilbe), ii. 298.
„ (Siluranodon), ii. 298.
auromarginata (Tilapia), iii. 180.
australis (Anguilla), iii. 9.
Awaous, iv. 22.
„ ocellaris, iv. 36.
axillaris (Mugil), iv. 91.

bachiqua (Mormyrus), i. 134.
Bagrinæ, ii. 219.
Bagrus, ii. 304, 381.
„ auratus, ii. 325.
„ bayad, ii. **305**, 307; iv. 297.
„ capensis, ii. 381.
„ capito, ii. 325.
„ degeni, ii. 311.
„ depressirostris, ii. 291.

Bagrus docmac, ii. **303**; iv. 297.
„ laticeps, 342.
„ maurus, ii. 321.
„ meridionalis, ii. 312
„ nigrita, ii. 342.
„ orientalis, ii. 307.
„ schilbeoides, ii. 283.
„ ubangensis, ii. **313**; iv. 297.
„ urostigma, ii. **312**; iv. 297.
bainsii (Anabas), iv. 52.
„ (Sandelia), iv. 52.
„ (Spirobranchus), iv. 52.
bajad (Silurus), ii. 305, 308.
balayi (Pimelodes), ii. 373.
ballayi (Auchenoglanis), ii. **373**; iv. 312.
„ (Petrocephalus), i. **52**; iv. 154.
banana (Gobius), iv. 30.
bane (Mormyrus), i. 48.
„ (Petrocephalus), i. **48**; iv. 154.
banguelensis (Barbus), ii. 151.
„ (Eutropius), ii. **282**; iv. 290.
barbatus (Labeo), i. 342.
Barbus, ii. 1.
„ ablabes, ii. 156.
„ aboinensis, iv. 268.
„ adansonii, ii. 283.
„ afer, ii. 178.
„ affinis, ii. 47.
„ ahlselli, iv. 231.
„ akakianus, ii. 122.
„ alluaudi, iv. 248.
„ altianalis, ii. 36.
„ alticola, ii. 55.
„ altidorsalis, ii. 101.
„ altus, ii. 117.
„ amphigramma, ii. 145.
„ anema, ii. **182**; iv. 272.
„ anoplus, ii. **177**; iv. 272.
„ ansorgii, ii. 126.
„ antinorii, ii. 112.
„ apleurogramma, ii. **144**; iv. 260.
„ apogonostomatus, iv. 272.
„ arcislongæ, ii. **169**; iv. 269.
„ argenteus, ii. 136.
„ argyrotænia, iv. 257.
„ asper, ii. 176.
„ aspilus, ii. **181**; iv. 272.
„ aspius, iv. 249.
„ atlanticus, ii. 87.
„ aurantiacus, iv. 270.
Barbus aureus, ii. 90.
„ banguelensis, ii. 151.
„ barilioides, iv. 266.
„ batesii, ii. 43.
„ bayoni, iv. 234.
„ beso, i. 356.
„ bingeri, ii. 69.
„ binny, ii. 26.
„ biscarensis, ii. **108**; iv. 250.
„ bottegi, ii. 70.
„ bowkeri, ii. 89.
„ brazzæ, ii. 180.
„ breijeri, ii. 103.
„ brevibarbis, ii. 49.
„ brevicauda, ii. 64.
„ brookingii, iv. 252.
„ brucii, ii. 80.
„ burchelli, ii. **146**; iv. 261.
„ burgi, ii. **147**; iv. 261.
„ bynni, ii. 26.
„ callensis, ii. 108, **109**, 112; iv. 250.
„ callipterus, ii. **167**; iv. 268.
„ camptacanthus, ii. 139, 163, **166**.
„ capensis, ii. **123**; iv. 253.
„ cardozoi, iv. 232.
„ carens, iv. 274.
„ carpio, ii. **134**; iv. 257.
„ caudimacula, ii. 138.
„ caudovittatus, ii. 94.
„ chilotes, ii. 93.
„ chlorotænia, ii. 162.
„ codringtonii, ii. 98.
„ compinei, ii. 53.
„ congicus, ii. 174.
„ cookii, iv. 244.
„ cottesi, ii. 139.
„ decipiens, ii. 104.
„ degeni, ii. 50.
„ deserti, ii. 157.
„ doggetti, ii. 174.
„ duchesnii, ii. **31**; iv. 224.
„ dwaarsensis, iv. 237.
„ eduardianus, ii. 63.
„ elephantis, ii. 78.
„ elongatus, ii. 75.
„ ensis, iv. 223.
„ erlangeri, ii. **29**; iv. 224.
„ eumystus, ii. 44.
„ eurystomus, ii. **64**; iv. 236.
„ eutænia, ii. **131**; iv. 256.

Barbus fairbairnii, ii. 97.
,, fasciolatus, ii. 161.
,, fasolt, iv. 242.
,, fergussonii, ii. 59.
,, figuigensis, iv. 250.
,, fritschii, ii. 85.
,, gananensis, ii. 37.
,, gibbosus, ii. 121.
,, gilchristi, ii. 88.
,, girardi, iv. 235.
,, gobionides, ii. 148.
,, gorguari, ii. 75.
,, gregorii, ii. **45**; iv. 230.
,, gruveli, iv. 237.
,, gudaricus, ii. 40.
,, guineensis, iv. 255.
,, guirali, ii. **142**; iv. 259.
,, gulielmi, iv. 225.
,, gunningi, iv. 243.
,, gurneyi, ii. 89, **150**; iv. 261.
,, habereri, iv. 239.
,, hamiltoni, iv. 251.
,, harringtonii, ii. 61.
,, hemipleurogramma, ii. **150**; iv. 261.
,, hindii, ii. **56**; iv. 231, 234.
,, holotænia, ii. **139**; iv. 258.
,, holubi, ii. **22**; iv. 223.
,, humeralis, ii. 154.
,, humilis, ii. 160.
,, hursensis, ii. 46.
,, ilgi, ii. 63.
,, inermis, ii. 152.
,, innocens, ii. **160**; iv. 266.
,, intermedius, ii. 45, **59**, 64.
,, jacksonii, ii. 105, **106**, 107.
,, jæ, ii. 184.
,, jarsinus, ii. **62**; iv. 236.
,, johnstonii, ii. 90.
,, karkensis, iv. 272.
,, kassamensis, ii. 30.
,, katangæ, ii. 104.
,, kerstenii, ii. **130**; iv. 255.
,, kessleri, ii. 131, **138**, 139; iv. 258.
,, kimberleyensis, iv. 226.
,, kivuensis, iv. 226.
,, krapfi, ii. **54**; iv. 231.
,, ksibi, ii. 111.
,, kurumani, ii. 144.
,, labialis, iv. 262.
Barbus labiatus, ii. 55.
,, lagoensis, ii. 100.
,, laticeps, ii. **128**; iv. 255.
,, latirostris, ii. 64.
,, leonensis, iv. 273.
,, lepidotus, ii. 26.
,, leptopogon, ii. 109.
,, leptosoma, ii. 50.
,, liberiensis, ii. 163.
,, lineolatus, iv. 223.
,, lineomaculatus, ii. **159**; iv. 266.
,, linnelli, ii. 53.
,, litamba, ii. **143**; iv. 259.
,, lobochilus, ii. 92.
,, lobogenys, ii. 33.
,, longicauda, ii. **121**; iv. 253.
,, luazomelæ, iv. 254.
,, lucius, iv. 240.
,, luhondo, iv. 255.
,, lujæ, iv. 261.
,, lumiensis, ii. 125.
,, macmillani, ii. 67.
,, macrolepis, ii. 99.
,, macronema, ii. 24.
,, macropristis, ii. 115.
,, macrops, iv. 265.
,, macrurus, iv. 263.
,, magdalenæ, ii. 179.
,, malacanthus, iv. 247.
,, marequensis, ii. 34, **36**.
,, margaritæ, ii. 39.
,, mathoiæ, ii. 66.
,, mattozi, ii. **118**; iv. 251.
,, mawambi, iv. 246.
,, mawambiensis, iv. 231.
,, meneliki, ii. 67.
,, mentalis, iv. 227.
,, mento, ii. 41.
,, meruensis, ii. 115.
,, mfongosi, iv. 228.
,, micronema, ii. 79.
,, microterolepis, ii. 23.
,, mimus, iv. 269.
,, minchini, ii. **126**; iv. 255.
,, miolepis, ii. 131, **141**, 168.
,, mirabilis, iv. 236.
,, mitior, ii. 105.
,, mohasicus, iv. 253.
,, moorii, ii. 206.
,, motebensis, ii. 147.

Barbus multimaculatus, ii. 148.
„ musumbi, iv. 271.
„ nairobiensis, ii. **132**; iv. 257.
„ nasus, ii. 113.
„ nasutus, iv. 247.
„ natalensis, ii. 23.
„ nedgia, ii. 33, 51.
„ neglectus, ii. 173.
„ neumayeri, ii. 132.
„ neuvillii, ii. 45.
„ nigeriensis, ii. **154**; iv. 264.
„ nigrolinea, ii. 130.
„ nummifer, ii. 105; iv. 250.
„ nyassæ, **77**; iv. 236.
„ occidentalis, ii. 32.
„ oliphanti, iv. 214.
„ oreas, ii. **38**; iv. 229.
„ oxyrhynchus, ii. 76.
„ pagenstecheri, ii. 72.
„ pallidus, ii. 149.
„ paludinosus, ii. **115**; iv. 251.
„ pappenheimi, ii. 107.
„ paucior, ii. 136.
„ paytoni, ii. 82.
„ percivali, ii. **135**; iv. 257.
„ perince, ii. **170**; iv. 269.
„ perplexicaus, ii. **71**; iv. 236.
„ pfefferi, ii. 117.
„ plagiostomus, ii. 38.
„ platyrhinus, ii. 76.
„ platystomus, ii. 73.
„ pleurogramma, ii. 120.
„ pleuropholis, ii. **175**; iv. 272.
„ poechii, iv. 250.
„ polylepis, ii. 21.
„ portali, ii. **133**; iv. 257.
„ progenys, ii. 102.
„ pumilis, ii. 186.
„ quadrimaculatus, i. 351.
„ quadripunctatus, ii. 153.
„ radcliffii, ii. **34**; iv. 226.
„ radiatus, ii. 155.
„ rapax, ii. **119**; iv. 251.
„ reinii, ii. 42.
„ rhinophorus, iv. 238.
„ rhoadesii, ii. 72.
„ rhodesianus, ii. 95.
„ riggenbachi, ii. 84.
„ rocadasi, iv. 224.
„ rogersi, ii. 180.
Barbus rosæ, iv. 239.
„ rothschildi, ii. 83.
„ roylii, iv. 233.
„ ruasæ, iv. 230.
„ rueppelli, ii. 25.
„ rufua, iv. 256.
„ ruspolii, ii. 28.
„ sabiensis, iv. 244.
„ salessii, ii. **183**; iv. 272.
„ salmo, ii. 129.
„ sauvagii, iv. 260.
„ sector, ii. 78.
„ serra, ii. **114**; iv. 251.
„ serrifer, ii. **124**; iv. 253.
„ serrula, iv. 259.
„ setifensis, ii. 110.
„ setivimensis, ii. **110**; iv. 251.
„ sexradiatus, ii. 128.
„ somereni, iv. 229.
„ spurrelli, iv. 264.
„ squamosissimus, iv. 258.
„ steindachneri, iv. 218.
„ stigmatopygus, ii. **185**; iv. 274.
„ surkis, ii. 65.
„ swierstræ, iv. 245.
„ tæniurus, ii. 165,
„ taitensis, ii. 117.
„ tanensis, ii. 56, **58**, 66.
„ tetraspilus, ii. 127.
„ tetrastigma, iv. 267.
„ thikensis, ii. 120.
„ toppini, iv. 274.
„ trevelyani, ii. **143**; iv. 259.
„ trimaculatus, ii. **103**, 105, 153; iv. 250.
„ trispilomimus, ii. **183**; iv. 272.
„ trispilopleura, ii. 169, **172**; iv. 269.
„ trispilus, ii. **163**; iv. 267.
„ tropidolepis, ii. 20.
„ unitæniatus, ii. **158**; iv. 266.
„ urotænia, iv. 262.
„ usambaræ, ii. 149.
„ victoriæ, ii. **96**; iv. 244.
„ vinciguerrai, ii. 115.
„ viviparus, ii. **170**; iv. 269.
„ vulneratus, ii. **148**; iv. 261.
„ waldoi, ii. 86.
„ walkeri, ii. 164.
„ wellmani, ii. 137.

Barbus welwitschii, ii. 115.
„ werneri, ii. 168.
„ wurtzi, ii. 99.
„ zambesensis, ii. 91.
„ zanzibaricus, ii. **136**; iv. 257.
„ zaphiri, ii. 74.
„ zuaicus, ii. 64.
„ zuluensis, iv. 223.
baremose (Alestes), i. **195**; iv. 176.
„ (Myletes), i. 195.
barilioides (Barbus), iv. 266.
Barilius, ii. 191.
„ altus, iv. 277.
„ ansorgii, iv. 278.
„ batesii, iv. 277.
„ bibie, ii. 202, 215.
„ buchholzi, ii. 201.
„ chiloangæ, iv. 277.
„ fasciolatus, ii. 200.
„ guentheri, ii. 205.
„ kingsleyæ, ii. 202.
„ loati, ii. **203**; iv. 279.
„ longirostris, ii. 195.
„ lujæ, ii. 196.
„ macrostoma, iv. 279.
„ microcephalus, ii. 205.
„ microlepis, ii. 208.
„ moorii, ii. **206**; iv. 280.
„ neavii, ii. **199**; iv. 276.
„ niloticus, ii. 193.
„ peringueyi, iv. 275.
„ sardella, ii. 210.
„ senegalensis, ii. 204.
„ steindachneri, ii. **197**; iv. 275.
„ stephensoni, iv. 276.
„ tanganicæ, ii. 207.
„ thebensis, ii. 193.
„ ubangensis, ii. **200**; iv. 277.
„ weeksii, ii. 195.
„ weynsii, ii. 198.
„ zambesensis, ii. 198.
Barynotus, ii. 1.
„ compinei, ii. 53.
„ lagensis, ii. 100.
batensoda (Brachysynodontis), ii. 472.
„ (Synodontis), ii. **472**; iv. 323.
batesianus (Mormyrops), iv. 153.
batesii (Alestes), i. **221**; iv. 184.
„ (Barbus), ii. **43**; iv. 321.
„ (Barilius), iv. 277.
batesii (Chiloglanis), ii. 485.
„ (Fundulus), iii. 28.
„ (Labeo), iv. 202.
„ (Marcusenius), i. 72.
„ (Mastacembelus), iv. 126.
„ (Microsynodontis), ii. 476.
„ (Pelmatochromis), iii. 393.
„ (Synodontis), ii. 455.
Bathybates, iii. 436.
„ fasciatus, iii. 441.
„ ferox, iii. 438.
„ graueri, iii. 437.
„ horni, iii. 440.
„ minor, iii. 442.
„ vittatus, iii. 440.
bayad (Bagrus), ii. **305**, 307; iv. 296.
„ (Porcus), ii. 305.
bayoni (Barbus), iv. 234.
„ (Hemitilapia), iii. 491.
„ (Paratilapia), iii. 337.
„ (Tilapia), iii. 240.
Bayonia, iii. 488.
„ xenodonta, iii. 488.
bebe (Hyperopisus), i. **142**; iv. 170.
„ (Mormyrus), i. 142.
Bedotia, iv. 77.
„ geayi, iv. 77.
„ madagascariensis, iv. 77.
Belonichthys, iii. 82.
„ zambesensis, iii. 82.
Belonoglanis, ii. 508.
„ tenuis, ii. 509.
bengalensis (Anguilla), iii. 7.
„ (Muræna), iii. 7.
beninensis (Malapterurus), ii. 512.
bennetti (Dules), iii. 95.
bensonii (Pœcilia), iii. 61.
bentleyi (Gnathonemus), i. 103.
„ (Mormyrus), i. 103.
berlandieri (Mugil), iv. 80.
beso (Barbus), i. 356.
„ (Capoëta), i. 356.
„ (Systomus), i. 356.
„ (Varicorhinus), i. 356.
besse (Characinus), i. 251.
„ (Ichthyoborus), i. 251.
betsileana (Tilapia), iii. 259.
betsileanus (Ptychochromis), iii. 259.
bibie (Barilius), ii. 202, 215.

bibie (Chelæthiops), ii. **215**; iv. 280.
„ (Leuciscus), ii. 215.
„ (Pelecus), ii. 215.
bichir (Polypterus), i. **6**, 10, 14, 16; iv. 149.
bicolor (Anguilla), iii. 9.
„ (Gobius), iv. 35.
„ (Haplochromis), iii. 346.
„ (Paratilapia), iii. 346.
bidorsalis (Heterobranchus), ii. **273**; iv. 290.
bifasciatus (Haplochilus), iii. **76**; iv. 325.
bilineata (Tilapia), iii. 204.
bimaculatus (Alestes), i. 213.
„ (Hemichromis), iii. **430**; iv. 335.
„ (Plecodus), iii. 503.
bingeri (Barbus), ii. 69.
binny (Barbus), ii. 26.
biscarensis (Barbus), ii. **108**; iv. 250.
biscutatus (Auchenaspis), ii. 367, 369.
„ (Auchenoglanis), ii. **367**, 369; iv. 310.
„ (Pimelodus), ii. 367.
bivittatus (Fundulus), iii. 24.
blanfordii (Discognathus), i. 349.
bleekeri (Paratilapia), iii. 315.
Blenniidæ, iv. 108.
Blennius, iv. 108.
„ alpestris, iv. 109.
„ anticolus, iv. 109.
„ cagnota, iv. 109.
„ frater, iv. 108.
„ lupulus, iv. 109.
„ sujefianus, iv. 108.
„ varus, iv. 109.
„ vulgaris, iv. 109.
bloyeti (Hemichromis), iii. 302.
„ (Paratilapia), iii. 302.
bocagii (Chrysichthys), iv. 299.
„ (Eutropius), ii. 290.
boieri (Atherina), iv. 74.
boninensis (Dules), iii. 96.
„ (Kuhlia), iii. 98.
boops (Ophthalmotilapia), iii. 265.
„ (Tilapia), iii. 265.
borbonicus (Mugil), iv. 82.
bottegi (Barbus), ii. 70.
„ (Engraulicypris), ii. 213.
„ (Labeo), i. 321; iv. **204**.
bottegi (Neobola), ii. 213.
boulengeri (Bryconæthiops), i. 188.
„ (Julidochromis), iii. 471.
„ (Labeo), iv. 198.
„ (Lamprologus), iii. 471.
„ (Mormyrops), i. **40**; iv. 154.
„ (Pelmatochromis), iii. 396.
„ (Phago), i. 248.
„ (Tilapia), iii. 182.
Boulengerina, iii. 92.
Boulengerochromis, iii. 308.
„ microlepis, iii. 370.
bouvieri (Schilbe), ii. 294.
bovei (Mormyrus), i. 54.
„ (Peltura), ii. 499.
„ (Petrocephalus), i. 54.
„ (Phractura), ii. 499.
bowkeri (Barbus), ii. 89.
bozasi (Mormyrus), i. 138.
brachistius (Marcusenius), i. **67**; iv. 158.
Brachyalestes, i. 190, 223.
„ acutidens, i. 224.
„ affinis, i. 208.
„ imberi, i. 209.
„ longipinnis, i. 202.
„ mocquardianus, i. 118.
„ nurse, i. 206.
„ ruppellii, i. 206.
brachycentrus (Gasterosteus), iv. 107.
brachyistius (Marcusenius), i. 65, 67.
„ (Mormyrops), i. 67.
brachynema (Chrysichthys), ii. 340.
brachypoma (Labeo), i. 324.
brachyrhinus (Mastacembelus), iv. 136.
Brachysynodontis, ii. 391.
„ batensoda, ii. 472.
brazzæ (Barbus), ii. 180.
breijeri (Barbus), ii. 103.
brevianalis (Engraulicypris), ii. **211**; iv. 280.
„ (Lamprologus), iii. 462.
„ (Neobola), ii. 211.
brevibarbis (Ancharius), ii. 380.
„ (Barbus), ii. 49.
„ (Chiloglanis), ii. 484.
„ (Chrysichthys), ii. 329.
„ (Chrysobagrus), ii. 329.
„ (Clariallabes), iv. 289.
brevicauda (Barbus), ii. 64.
„ (Mastacembelus), iv. 133.

brevicauda (Phractura), ii. 502.
breviceps (Clarias), ii. **247**; iv. 284.
„ (Mormyrops), i. **36**; iv. 153.
brevifilis (Sicydium), iv. 43.
brevimanus (Tilapia), iii. 196.
brevior (Allabenchelys), ii. 266.
„ (Luciolates), iii. 111.
brevipinnis (Alestes), i. 227.
„ (Distichodus), i. **272**; iv. 193.
brevis (Alestes), i. 222.
„ (Amphilius), ii. 361.
„ (Hydrocyon), i. **186**; iv. 176.
„ (Lamprologus), iii. 478.
„ (Marcusenius), iv. 160.
„ (Mochocus), ii. 495.
„ (Nannocharax), i. 280.
„ (Tilapia), iii. 262.
britannicus (Mugil), iv. 84.
brookingii (Barbus), iv. 252.
brucii (Barbus), ii. 80.
„ (Gnathonemus), iv. 166.
„ (Haplochilus), iii. 26.
„ (Varicorhinus), i. **354**; iv. 214.
brumpti (Petersius), i. 235.
bruyerii (Gnathonemus), i. 105.
Brycinus, i. 190.
„ macrolepidotus, i. 217.
„ nurse, i. 206.
Bryconæthiops, i. 187.
„ boulengeri, i. 188.
„ microstoma, i. **188**; iv. 176.
„ yseuxi, i. **189**; iv. 176.
buchholzi (Barilius), ii. 201.
„ (Opsaridium), ii. 201.
„ (Pantodon), i. **151**; iv. 171.
budgetti (Clarias), ii. 231.
„ (Marcusenius), i. 83.
„ (Synodontis), ii. 403.
buettikoferi (Chromis), iii. 214.
„ (Clarias), ii. 261.
„ (Ophichthys), iii. 10.
„ (Paratilapia), iii. 390.
„ (Pelmatochromis), **390**, 391; iv. 333.
„ (Sphagebranchus), iii. 10.
„ (Tilapia), iii. **214**; iv. 330.
bulumæ (Clarias), ii. 258.
bumbanus (Mormyrus), iv. 168.
burchelli (Barbus), ii. **146**; iv. 261.
burgi (Barbus), ii. **147**; iv. 261.
burtoni (Chromis), iii. 217.
„ (Tilapia), iii. 217.
bustamantæi (Gobius), iv. 29.
„ (Lentipes), iv. 46.
„ (Sicydium), iv. 46.
busumana (Tilapia), iii. 197.
busumanus (Chromis), iii. 197.
buthupogon (Clarias), ii. 252.
Butis, iv. 7.
„ butis, iv. 11.
„ melanopterus, iv. 11.
butis (Butis), iv. 11.
„ (Cheilodipterus), iv. 10.
„ (Eleotris), iv. **10**, 12.
büttikoferi (Chrysichthys), ii. 322.
„ (Eleotris), iv. 18.
„ (Polypterus), i. 16.
bynni (Barbus), ii. 26.
„ (Cyprinus), ii. 26.
bythipogon (Clarias), ii. **252**; iv. 284.

caballus (Mormyrus), i. 132.
cabindæ (Haplochilus), iii. 68.
cabræ (Marcusenius), i. 65.
„ (Tilapia), iii. 194.
cærulea (Fundulus), iii. 30.
„ (Paratilapia), iii. 433.
cæruleo-maculatus (Mugil), iv. 91.
cæruleomaculatus (Chromis), iii. 190.
cærulescens (Kuhlia), iii. 93.
cæruleus (Champsochromis), iii. 433.
cafer (Labeo), i. 339.
cagnota (Blennius), iv. 109.
calabaricus (Calamichthys), i. **18**; iv. 151.
„ (Erpetoichthys), i. 18.
Calamichthys, i. 17.
„ calabaricus, i. **18**; iv. 151.
calaritana (Lebias), iii. 18.
„ (Pœcilia), iii. 18.
calaritanus (Cyprinodon), iii. 18.
callarias (Silurus), ii. 469.
callensis (Alburnus), ii. 188.
„ (Anguilla), iii. 5.
„ (Barbus), ii. 108, **109**, 112; iv. 250.
„ (Leuciscus), ii. **188**; iv. 275.
calliptera (Tilapia), iii. 222.
callipterus (Barbus), ii. **167**; iv. 268.

callipterus (Chromis), iii. 222.
„ (Ctenochromis), iii. 222.
„ (Lamprologus), iii. 476.
calliura (Paratilapia), iii. 374.
calliurus (Haplochilus), iii. 59.
„ (Lamprologus), iii. 481.
camaronensis (Chrysichthys), ii. 320.
cameronensis (Chiloglanis), ii. 482.
„ (Haplochilus), iii. **47**, 59; iv. 325.
„ (Kneria), i. **171**; iv. 174.
camerunensis (Clarias), ii. 252.
(Tilapia), iii. 193.
camptacanthus (Barbus), ii. 139, 163, **166**.
„ (Puntius), ii. 164, 166.
camptosiensis (Mugil), iv. 80.
Campylomormyrus, i. 94.
„ elephas, i. 120.
„ tamandua, i. 118.
canariensis (Anguilla), iii. 5.
cantini (Tylognathus), i. 331.
cantoris (Eleotris), iv. 15.
capensis (Abrostomus), i. 340.
„ (Anabas), iv. 50.
„ (Anguilla), iii. 6.
„ (Bagrus), ii. 381.
„ (Barbus), ii. **123**; iv. 253.
„ (Clarias), ii. 228, 235, **240**; iv. 283.
„ (Elops), i. 25.
„ (Fundulus), iii. 39.
„ (Galaxias), iii. 12.
„ (Labeo), i. **340**; iv. 209.
„ (Mugil), iv. 84, 85.
„ (Spirobranchus), iv. 50.
capito (Bagrus), ii. 325.
„ (Chrysichthys), ii. 325.
„ (Mugil), iv. 83.
Capoëta, i. 352; ii. 1.
„ atlantica, ii. 87.
„ beso, i. 356.
„ dillonii, i. 356.
„ perplexicans, iv. 236.
„ ruwenzorii, iv. 222.
„ tanganicæ, i. 358.
„ waldoi, ii. 86.
Carangidæ, iv. 1.
Carcharias, i. 2.
„ zambesensis, i. 2.
Carchariidæ, i. 1.
cardozoi (Barbus), iv. 232.
carens (Barbus), iv. 274.
carlottæ (Paratilapia), iii. 353.
carolina (Argentina), i. 25.
carpio (Barbus), ii. **134**; iv. 257.
carsonii (Clarias), ii. **243**; iv. 283.
caschive (Mormyrus), i. 128, **136**.
caspia (Atherina), iv. 74.
castaneus (Plotosus), ii. 279.
castelnaui (Marcusenius), iv. 159.
castor (Hippopotamyrus), i. 77.
„ (Marcusenius), i. 77.
catebus (Gobius), iv. 24.
catostoma (Mormyrus), i. 52, 57.
„ (Petrocephalus), i. 56, **57**.
caudalis (Petersius), i. 236.
„ (Synodontis), ii. 397.
caudavittatus (Dules), iii. 98.
„ (Holocentrus), iii. 98.
caudifasciatus (Pelmatochromis), iii. **394**; iv. 333.
caudimacula (Barbus), ii. 138.
caudomarginata (Tilapia), iv. 327.
caudovittata (Kuhlia), iii. 98.
caudovittatus (Barbus), ii. 94.
„ (Synodontis), ii. 412.
cavifrons (Hemichromis), iii. 419.
„ (Paratilapia), iii. 419.
„ (Pelmatochromis), iii. 419.
celebensis (Anguilla), iii. 6.
Centrarchidæ, iii. 91.
Centriscus niloticus, i. 137.
Centrogaster rhombeus, iii. 121.
Centropodus, iii. 119.
„ rhombeus, iii. 121.
Centropomus ambassis, iii. 112.
„ lupus, iii. 102.
„ niloticus, iii. 105.
„ rupestris, iii. 93.
cephalopeltis (Sphagebranchus), iii. 10.
cephalotus (Mugil), iv. 82.
cephalus (Mugil), iv. **80**, 83, 90.
cerasogaster (Paratilapia), iii. 316.
ceylonensis (Mugil), iv. 93.
Chætodon argenteus, iii. 121.
„ rhombeus, iii. 123.
Chalceus guile, i. 206.
Champsoborus, iv. 188.
„ pellegrini, iv. 188.
Champsochromis, iii. 433.
„ cæruleus, iii. 433.
„ esox, iii. 435.

Champsochromis longiceps, iii. 434.
Channallabes, ii. 271.
„ apus, ii. **271**; iv. 289.
Chanos, i. 164.
„ arabicus, i. 164.
„ chanos, i. 164.
„ chloropterus, i. 164.
„ lubina, i. 164.
„ mento, i. 164.
„ mossambicus, i. 164.
„ nuchalis, i. 164.
„ salmoneus, i. 164.
chanos (Chanos), i. 164.
„ (Lutodeira), i. 164.
„ (Mugil), 164.
chaperi (Alestes), i. **203**; iv. 179.
„ (Haplochilus), iii. 56.
chapmanii (Chromys), iii. 171.
Characinidæ, i. 174.
Characinus besse, i. 251.
„ dentex, i. 180.
„ nefasch, i. 273, 275.
„ niloticus, i. 193.
chariensis (Labeo), i. **337**; iv. 206.
charmuth (Macropteronotus), ii. 226, 235.
Cheilobarbus, ii. 1.
Cheilodipterus butis, iv. 10.
„ culius, iv. 21.
Chelæthiops, ii. 214.
„ bibie, ii. **215**; iv. 280.
„ elongatus, ii. **216**; iv. 280.
chelo (Mugil), iv. 87, **89**.
chevalieri (Haplochilus), iii. 77.
chiarinii (Discognathus), i. 351.
chiloangæ (Barilius), iv. 277.
Chilochromis, iii. 492.
„ duponti, iii. 493.
Chiloglanis, ii. 478.
„ batesii, ii. 485.
„ brevibarbis, ii. 484.
„ cameronensis, ii. 482.
„ deckenii, ii. **479**, 481.
„ dybowskii, ii. 489.
„ modjensis, ii. 480.
„ neumanni, ii. 481.
„ niloticus, ii. 483.
chilotes (Barbus), ii. 93.
„ (Paratilapia), iii. 338.
Chilotilapia, iii. 498.
„ rhoadesii, iii. 499.
Chimarrhoglanis, ii. 353.
Chimarrhoglanis leroyi, ii. 357.
chloropterus (Chanos), i. 164.
chlorotænia (Barbus), ii. 162.
Chondrostoma, i. 352.
„ dembeensis, i. 306, 345.
„ dillonii, i. 356.
Chonerhinus, iv. 148.
„ africanus, iv. 148.
Chonophorus, iv. 22.
christyi (Haplochilus), iii. 46.
„ (Tilapia), iii. 204.
Chromichthys, iii. 427.
„ elongatus, iii. 428.
Chromidotilapia, iii. 377.
„ frederici, iii. 355.
„ kingsleyæ, iii. 398.
Chromis, iii. 138.
„ affinis, iii. 190.
„ andreæ, iii. 197.
„ auratus, iii. 246.
„ aureus, iii. 190.
„ buettikoferi, iii. 214.
„ burtoni, iii. 217.
„ busumanus, iii. 197.
„ cæruleomaculatus, iii. 190.
„ callipterus, iii. 222.
„ desfontainii, iii. 302.
„ diagramma, iii. 275.
„ discolor, iii. 190.
„ dumerilii, iii. 154.
„ faidherbi, iii. 190.
„ fasciatus, iii. 215.
„ flavii-josephi, iii. 302.
„ galilæus, iii. 169.
„ guentheri, iii. 162.
„ guineensis, iii. 201.
„ heudeloti, iii. 173.
„ horii, iii. 228.
„ humilis, iii. 213.
„ jallæ, iii. 213.
„ johnstoni, iii. 249.
„ kirkii, iii. 251.
„ lateralis, iii. 169.
„ lateristriga, iii. 360.
„ latus, iii. 190.
„ lethrinus, iii. 254.
„ macrocephalus, iii. 176.
„ melanopleura, iii. 190.
„ menzalensis, iii. 197.
„ microcephalus, iii. 173.
„ microstomus, iii. 169.

Chromis mossambicus, iii. 154, 157, 197.
„ multicolor, iii. 299.
„ multifasciatus, iii. 175.
„ natalensis, iii. 157.
„ nigripinnis, iii. 173.
„ niloticus, iii. 154, 157, 162, 167, 169, 173, 190, 197, 206.
„ nuchisquamulatus, iii. 290.
„ obliquidens, iii. 290.
„ ogowensis, iii. 190.
„ ovalis, iii. 208.
„ philander, iii. 300.
„ pleuromelas, iii. 169.
„ polycentra, iii. 190.
„ rangii, iii. 174.
„ rendalli, iii. 190.
„ spilurus, iii. 162.
„ squamipinnis, iii. 183.
„ subocularis, iii. 222, 249.
„ tanganicæ, iii. 268.
„ tetrastigma, iii. 250.
„ tholloni, iii. 202.
„ tiberiadis, iii. 169.
„ tristrami, iii. 197, 201.
„ vorax, iii. 156.
„ williamsi, iii. 225.
„ zillii, iii. 197.
Chromys andersonii, iii. 171.
„ chapmanii, iii. 171.
„ frederici, iii. 355.
„ levaillantii, iii. 320.
„ livingstonii, iii. 328.
„ moffati, iii. 300.
„ ngamensis, iii. 328.
„ smithii, iii. 357.
„ sparmanni, iii. 171.
„ thumbergi, iii. 328.
Chrysichthys, ii. 314.
„ acutirostris, ii. **319**; iv. 299.
„ ansorgii, iv. 300.
„ auratus, ii. 324, **325**, 327; iv. 303.
„ bocagii, iv. 299.
„ brachynema, ii. 340.
„ brevibarbis, ii. 329.
„ buttikoferi, ii. 322.
„ camaronensis, ii. 320.
„ capito, ii. 325.
„ coriscanus, ii. 322.
„ cranchii, ii. **332**, 342.
„ delhezi, ii. 335.
Chrysichthys duttoni, ii. 331.
„ filamentosus, iv. 301.
„ furcatus, ii. **320**; iv. 299.
„ graueri, iv. 298.
„ habereri, iv. 304.
„ kingsleyæ, ii. 324.
„ lagoensis, ii. 322.
„ longibarbis, ii. **330**; iv. 303.
„ mabusi, ii. 336.
„ macrops, ii. 322, 324, 325.
„ myriodon, ii. 339.
„ nigrita, ii. 342.
„ nigrodigitatus, ii. **321**; iv. 301.
„ ogowensis, ii. 322.
„ ornatus, ii. **337**; iv. 303.
„ persimilis, ii. 324; iv. **301**.
„ punctatus, ii. 334.
„ rueppelli, ii. 327.
„ sharpii, ii. 318.
„ sianenna, ii. 317.
„ thonneri, iv. 308.
„ wagenaari, ii. 331.
„ walkeri, ii. **324**; iv. 301.
Chrysobagrus, ii. 314.
„ brevibarbis, ii. 329.
„ longibarbis, ii. 330.
chrysonota (Paratilapia), iii. 362.
Chrysophrys, iii. 132.
„ vagus, iii. 132.
Cichlidæ, iii. 133.
ciliata (Kuhlia), iii. 93.
„ (Perca), iii. 93.
„ (Percichthys), iii. 93.
cinerea (Paratilapia), iii. 344.
citernii (Mormyrops), iv. 153.
„ (Synodontis), ii. 410.
Citharichthys, iv. 4.
„ guatimalensis, iv. 4.
„ spilopterus, iv. 4.
Citharidium, i. 289.
„ ansorgii, i. 289.
Citharininæ, i. 176.
Citharinus, i. 290.
„ citharus, i. **291**; iv. 197.
„ congicus, i. **293**; iv. 197.
„ geoffroyi, i. **291**; iv. 197.
„ gibbosus, i. 297.
„ latus, i. **295**; iv. 197.
„ macrolepis, i. 294.
citharus (Citharinus), i. **291**; iv. 197.

citharus (Serrasalmus), i. 291.
Cladistia, i. 4.
Clariallabes, ii. 268.
„ brevibarbis, iv. 289.
„ longicaudatus, iv. 289.
„ melas, ii. **268**; iv. 289.
Clarias, ii. 221.
„ alluaudi, ii. 253.
„ amplexicauda, ii. 261.
„ angolensis, ii. **250**; iv. 284.
„ anguillaris, ii. **226**, 231; iv. 281.
„ breviceps, ii. **247**; iv. 284.
„ budgetti, ii. 231.
„ buettikoferi, ii. 261.
„ bulumæ, ii. 258.
„ buthupogon, ii. 252.
„ bythipogon, ii. **252**; iv. 284.
„ camerunensis, ii. 252.
„ capensis, ii. 228, 235, **240**; iv. 283.
„ carsonii, ii. **243**; iv. 283.
„ dolloi, ii. 250.
„ dumerilii, ii. **257**; iv. 286.
„ esamesæ, iv. 285.
„ fouloni, ii. **263**; iv. 288.
„ gabonensis, ii. 250, 252.
„ gariepinus, ii. **228**, 232.
„ guentheri, ii. 232.
„ hasselquistii, ii. 226.
„ hilgendorfi, iv. 287.
„ jaensis, ii. **242**; iv. 283.
„ kingsleyæ, ii. 260.
„ læviceps, ii. **260**; iv. 287.
„ lazera, ii. 232, **235**; iv. 281.
„ liberiensis, ii. **258**; iv. 286.
„ liocephalus, ii. **246**; iv. 283.
„ longiceps, ii. 235.
„ longior, ii. 249.
„ macracanthus, ii. 235.
„ macromystax, ii. 256.
„ melas, ii. 268.
„ mellandi, ii. **238**; iv. 283.
„ microphthalmus, ii. 232, 253.
„ monkei, iv. 284.
„ moorii, ii. 230.
„ mossambicus, ii. 228, **232**.
„ neumanni, ii. 246.
„ ngamensis, ii. 235; iv. **282**.
„ orontis, ii. 235.
„ oxycephalus, iv. 284.
„ pachynema, ii. **259**; iv. 287.
Clarias parvimanus, ii. 226.
„ platycephalus, ii. 241.
„ poensis, ii. 244.
„ robecchii, ii. 232.
„ salæ, ii. **284**; iv. 288.
„ senegalensis, ii. 231.
„ smithii, ii. 232.
„ submarginatus, ii. **245**; iv. 283.
„ syriacus, ii. 235.
„ theodoræ, ii. **262**; iv. 288.
„ tsanensis, ii. 239.
„ vinciguerræ, ii. 234.
„ walkeri, ii. **248**; iv. 284.
„ werneri, ii. **254**; iv. 284.
„ xenodon, ii. 235.
clarias (Pimelodus), ii. 404.
„ (Silurus), ii. 469.
„ (Synodontis), ii. 404, **469**; iv. 322.
Clariinæ, ii. 218.
Clarotes, ii. 341.
„ heuglinii, 342.
„ laticeps, ii. **342**; iv. 304.
clavigera (Corvina), iii. 116.
Clupea, i. 153.
„ alosa, i. 154.
„ cyprinoides, i. 28.
„ fiuta, i. 154.
„ nilotica, i. 154.
„ sprattus, i. 154.
Clupeidæ, i. 153.
Clupeinæ, i. 153.
cobitiformis (Mormyrus), i. 59.
Cobitinæ, i. 300.
Cobitis, ii. 216.
„ pacifica, iv. 21.
„ punctifer, iii. 13.
„ zebratus, iii. 12.
codringtonii (Barbus), ii. 98.
„ (Paratilapia), iii. 352.
cœcutiens (Myxus), iv. 82.
Cœlonotus, iii. 84.
„ argulus, iii. 85.
„ liaspis, iii. 85.
„ vaillanti, iii. 85.
Coius trivittatus, iii. 114.
commersonii (Ambassis), iii. **112**; iv. 326.
„ (Hemirhamphus), iii. 15, 16.
„ (Psettus), iii. 120.
compinei (Barbus), ii. 53.
„ (Barynotus), ii. 53.

compressiceps (Lamprologus), iii. 479.
„ (Paratilapia), iii. 331.
congensis (Eutropius), ii. 281, 288.
„ (Silurus), ii. 281.
congica (Parailia), iii. 302.
congicum (Ctenopoma), iv. 57.
congicus (Anabas), iv. 57.
„ (Barbus), ii. 174.
„ (Citharinus), i. **293**; iv. 197.
„ (Elops), i. 26.
„ (Gephyroglanis), ii. 346.
„ (Mastacembelus), iv. 123.
„ (Pelmatochromis), iii. 386.
„ (Polypterus), i. 9.
congolensis (Eutropius), ii. 281.
„ (Lamprologus), iii. 464.
„ (Schilbe), iv. 293.
congoro (Labeo), i. 319.
conserialis (Petersius), i. 233.
constanciæ (Mugil), iv. 80.
cookii (Barbus), iv. 244.
Coptodon, iii. 138.
„ zillii, iii. 197.
corbali (Paratilapia), iii. 351.
Coregonus niloticus, i. 283.
Corematodus, iii. 494.
„ shiranus, iii. 494.
coriscanus (Chrysichthys), ii. 322.
corneti (Stomatorhinus), i. 90.
corrugatus (Mugil), iv. 90.
Corvina, iii. 115.
„ clavigera, iii. 116.
„ nigrita, iii. 116.
cottesi (Barbus), ii. 139.
Cotylopus, iv. 42.
„ acutipinnis, iv. 44.
„ parvipinnis, iv. 45.
coubie (Labeo), i. 309, 313, **317**; iv. 199.
courteti (Synodontis), ii. **441**; iv. 320.
cranchii (Chrysichthys), ii. **332**, 342.
„ (Pimelodus), ii. 332.
crassa (Tilapia), iii. 205.
crassilabris (Haplochromis), iii. 345.
„ (Paratilapia), iii. 345.
crassispinum (Diagramma), iii. 129.
crassus (Xenocharax), i. 288.
Crayracion fahaka, iv. 143.
crenilepis (Mugil), iv. 94.
Cristiceps argentatus, iv. 111.
Cristivomer, i. 166.
crocodilus (Mesoborus), i. 245.
Cromeria, i. 173.
„ nilotica, i. **173**; iv. 175.
Cromeriidæ, i. 173.
Crossochilus quadrimaculatus, i. 351.
Crossopterygii, i. 4.
cryptacanthus (Mastacembelus), iv. **117**, 120, 125, 134.
cryptochilus (Mugil), iv. 86.
Ctenochromis, iii. 138, 284.
„ callipterus, iii. 222.
„ kirkii, iii. 251.
„ nuchisquamulatus, iii. 290.
„ obliquidens, iii. 290.
„ pectoralis, iii. 237.
„ sauvagii, iii. 290.
„ strigigena, iii. 299.
Ctenopoma, iv. 48.
„ acutirostre, iv. 67.
„ congicum, iv. 57.
„ denticulatum, iv. 67.
„ gabonense, iv. 55.
„ kingsleyæ, iv. 63.
„ maculata, iv. 65.
„ microlepidotum, iv. 52.
„ multifasciata, iv. 65.
„ multispinis, iv. 53.
„ nanum, iv. 58.
„ nigropannosum, iv. 55.
„ ocellatum, iv. 67.
„ petherici, iv. 61, 62, 64, 67.
„ weeksii, iv. 65.
Culius, iv. 7.
„ fuscus, iv. 21.
„ niger, iv. 21.
culius (Cheilodipterus), iv. 21.
cundinga (Cyprinodon), i. 28.
„ (Elops), i. 28.
cunganus (Petrocephalus), iv. 155.
cunningtoni (Dinotopterus), ii. 277.
„ (Lamprologus), iii. 474.
„ (Mastacembelus), iv. 119.
Cunningtonia, iii. 273.
„ longiventralis, iii. 273.
curtifilis (Megalops), i. 28.
curtus (Mormyrops), i. 41.
„ (Mugil), iv. 84.
curvidens (Myxus), iv. 87.
curvifrons (Mormyrus), i. 132.
curvirostris (Gnathonemus), i. 123.
cuvieri (Hydrocyonoides), i. 177.
cyanogaster (Cyprinodon), iii. 19.

cyanostictus (Eretmodus), iii. 495.
cyclorhynchus (Labeo), i. 326.
cylindricus (Labeo), i. **331**; iv. 204.
Cynoglossus, iv. 5.
„ senegalensis, iv. 6.
Cyprinidæ, i. 298.
Cyprininæ, i. 299.
Cyprinodon, iii. 18.
„ calaritanus, iii. 18.
„ cundinga, i. 28.
„ cyanogaster, iii. 19.
„ dispar, iii. 19, 20.
„ doliatus, iii. 19.
„ fasciatus, iii. 18.
„ hammonis, iii. 19.
„ iberus, iii. 21.
„ lunatus, iii. 20.
„ orthonotus, iii. 33.
„ stoliczkanus, iii. 20.
Cyprinodontidæ, iii. 17.
cyprinoides (Clupea), i. 28.
„ (Elops), i. 28.
„ (Gnathonemus), i. **110**; iv. 167.
„ (Megalops), i. 28.
„ (Mormyrops), i. 110.
„ (Mormyrus), i. 48, 49, **110**.
„ (Nestis), iv. 99.
Cyprinus auratus, ii. 218.
„ bynni, ii. 26.
„ lepidotus, ii. 26.
„ niloticus, i. 304, 329.
Cyrtocara, iii. 445.
„ moorii, iii. 445.

daganensis (Eleotris), iv. 18.
damii (Paretroplus), iii. **505**, 506.
dardennii (Tilapia), iii. 256.
darlingi (Labeo), i. 321.
„ (Pelmatochromis), iii. 410.
debauwi (Eutropius), ii. 288.
decadactylus (Galeoides), iv. 103.
„ (Polynemus), iv. 103.
decipiens (Barbus), ii. 104.
deckenii (Chiloglanis), ii. **479**, 481.
decorsii (Haplochilus), iii. 57.
decorus (Synodontis), ii. 468.
degeni (Bagrus), ii. 311.
„ (Barbus), ii. 50.
„ (Petrocephalus), i. 58.
degeni (Platytæniodus), iii. 426.
dejoannis (Petrocephalus), i. 48.
delalandii (Anguilla), iii. 6.
delhezi (Chrysichthys), ii. 335.
„ (Polypterus), i. 13.
deliciosus (Mormyrops), i. **32**; iv. 152.
„ (Mormyrus), i. 32.
„ (Oxyrhynchus), i. 32.
dembeensis (Chondrostoma), i. 345.
„ (Discognathus), i. **345**; iv. 212.
„ (Gymnostomus), i. 345.
dembensis (Chondrostoma), i. 306.
demeusii (Paratilapia), iii. 324.
dendera (Mormyrus), i. 34.
dentex (Alestes), i. **193**; iv. 176.
„ (Characinus), i. 180.
„ (Hydrocyon), i. 180.
„ (Myletes), i. 193.
„ (Salmo), i. 180, 193, 195.
denticulatum (Ctenopoma), iv. 67.
depauwi (Synodontis), ii. 438.
depressirostris (Bagrus), ii. 291.
„ (Eutropius), ii. **291**; iv. 292.
dequesne (Mormyrus), i. 48.
„ (Petrocephalus), i. 48.
descampsii (Ectodus), iii. 446.
deserti (Barbus), ii. **157**.
desfontainesi (Astatotilapia), iii. 303.
„ (Haplochromis), iii. 302.
„ (Tilapia), iii. 302.
desfontainii (Chromis), iii. 302.
„ (Labrus), iii. 302.
„ (Sparus), iii. 302.
desguezi (Hemichromis), iii. 428.
dewaalii (Gobius), iv. 26.
dewaarsensis (Barbus), iv. 237.
dewindti (Paratilapia), iii. 367.
diacantha (Perca), iii. 102.
„ (Sciæna), iii. 102.
diacanthus (Labrax), iii. 102.
diadema (Mugil), iv. 94.
Diagramma, iii. 127.
„ crassispinum, iii. 129.
„ griseum, iii. 128.
„ jayakari, iii. 128.
„ macrolepis, iii. 129.
diagramma (Chromis), iii. 275.
„ (Simochromis), iii. 275.
Dicentrarchus, iii. 101.
„ elongatus, iii. 102.

Dicentrarchus labrax, iii. 102.
„ orientalis, iii. 104.
„ punctatus, iii. 104.
Dillonia, i. 352.
„ abyssinica, i. 356.
„ dillonii, i. 356.
dillonii (Capoëta), i. 356.
„ (Chondrostoma), i. 356.
„ (Dillonia), i. 356.
dimidiata (Paratilapia), iii. 360.
dimidiatus (Hemichromis), iii. 360.
„ (Nannocharax), i. 286.
„ (Nannochromis), iii. 376.
„ (Pelmatochromis), iii. 376.
Dinotopterus, ii. 276.
„ cunningtoni, ii. 277.
Dipneusti, i. 18.
Discognathus, i. 343.
„ blanfordii, i. 349.
„ chiarinii, i. 351,
„ dembeensis, i. **345**; iv. 212.
„ hindii, i. **350**; iv. 212.
„ hirticeps, i. 351.
„ johnstonii, i. 346.
„ lamta, i. 349.
„ makiensis, i. 348.
„ quadrimaculatus, i. 351.
„ rothschildi, i. 345.
„ vinciguerræ, i. 347.
discolor (Chromis), iii. 190.
discorhynchus (Marcusenius), i. **81**; iv. 162.
„ (Mormyrus), i. 81, 82.
dispar (Cyprinodon), iii. 19, 20.
„ (Hemirhamphus), iii. 16.
„ (Lebias), iii. 20.
„ (Zenarchopterus), iii. 16.
dispila (Schilbe), ii. 293.
Distichodontinæ, i. 176.
Distichodus, i. 258.
„ affinis, i. **260**; iv. 192.
„ altus, i. **261**; iv. 193.
„ ansorgii, iv. 194.
„ antonii, i. 266.
„ atroventralis, i. 267.
„ brevipinnis, i. **272**; iv. 193.
„ engycephalus, i. **271**; iv. 193.
„ fasciolatus, i. 270.
„ hypostomatus, i. **264**; iv. 193.
Distichodus leptorhynchus, i. 277.
„ lusosso, i. **277**; iv. 194.
„ macrolepis, i. 268.
„ maculatus, i. **264**; iv. 193.
„ marnoi, i. 291.
„ martini, i. 275.
„ mossambicus, i. **268**; iv. 193.
„ nefasch, i. 274, 275.
„ niloticus, i. 273.
„ noboli, i. 262.
„ notospilus, i. **262**; iv. 193.
„ petersii, i. 265.
„ rodolphi, i. 274.
„ rostratus, i. **275**; iv. 194.
„ schenga, i. 268.
„ sexfasciatus, i. 276.
„ touteei, i. 271.
ditchoa (Pellona), i. 163.
dobuloides (Agonostoma), iv. 99.
„ (Nestes), iv. 99.
Docimodus, iii. 281.
„ johnstonii, iii. 282.
docmac (Bagrus), ii. **308**; iv. 298.
„ (Porcus), ii. 308.
docmak (Silurus), ii. 308.
doggetti (Barbus), ii. 174.
doliatus (Cyprinodon), iii. 19.
dolloi (Clarias), ii. 250.
„ (Protopterus), i. **22**; iv. 152.
„ (Tilapia), iii. 184.
donnyi (Genyomyrus), i. **125**; iv. 167.
Doradinæ, ii. 220.
dorsalis (Hyperopisus), i. 142.
„ (Mormyrus), i. 142.
„ (Paratilapia), iii. 350.
„ (Phagrus), i. 142.
Doryichthys, iii. 82, 83.
„ lineatus, iii. 83.
„ mento, iii. 82.
„ smithii, iii. 83.
Doumea, ii. 496.
„ angolensis, ii. 497.
„ scaphirhynchura, ii. 505.
„ typica, ii. 496.
dubahra (Mugil), iv. 84.
dubia (Sphyræna), iv. 105.
„ (Tilapia), iii. 189.
duchesnii (Barbus), ii. **31**; iv. 224.
Dules, iii. 92.
„ argenteus, iii. 95.

Dules bennetti, iii. 95.
„ caudavittatus, iii. 98.
„ fuscus, iii. 93.
„ guamensis, iii. 93.
„ haswellii, iii. 93.
„ malo, iii. 96.
„ marginatus, iii. 93, 96.
„ mato, iii. 96.
„ rupestris, iii. 93.
„ vanicolensis, iii. 93.
dumerilii (Chromis), iii. 154.
„ (Clarias), ii. **257**; iv. 286.
„ (Eleotris), iv. 18.
„ (Tilapia), iii. 155.
duponti (Chilochromis), iii. 493.
duttoni (Chrysichthys), ii. 331.
dybowskii (Chiloglanis), ii. 489.
„ (Euchilichthys), ii. 489.

Ectodus, iii. **446**, 447.
„ albini, iii. 450.
„ descampsii, iii. 446.
„ foæ, iii. 266.
„ longianalis, iii. 448.
„ melanogenys, iii. 448.
eduardiana (Schubotzia), iii. 500.
„ (Tilapia), iii. 166.
eduardianus (Barbus), ii. 63.
eetveldii (Eugnathichthys), i. 241.
ehrenbergii (Heterotis), i. 149.
„ (Mormyrus), i. 48.
„ (Petrocephalus), i. 48.
electricus (Malopterurus), ii. **512**; iv. 324.
„ (Silurus), ii. 512.
elegans (Haplochilus), iii. **58**, 59.
Eleotris, iv. 7.
„ africana, iv. 17.
„ butis, iv. **10**, 12.
„ büttikoferi, iv. 18.
„ cantoris, iv. 15.
„ daganensis, iv. 18.
„ dumerilii, iv. 18.
„ fornasinii, iv. 21.
„ fusca, iv. 21.
„ humeralis, iv. 11.
„ klunzingeri, iv. 21.
„ kribensis, iv. 14.
„ lebretoni, iv. 9.
„ leonensis, iv. 15.
„ maculata, iv. 18.
Eleotris madagascariensis, iv. 15, **16**.
„ margaritacea, iv. 15.
„ mauritianus, iv. 21.
„ melanopterus, iv. 11.
„ monteiri, iv. 20.
„ nana, iv. 12.
„ nigra, iv. 21.
„ ophiocephalus, iv. 15.
„ pectoralis, iv. 12.
„ pisonis, iv. 18.
„ pleurops, iv. 10.
„ porocephaloides, iv. 15.
„ porocephalus, iv. 15.
„ senegalensis, iv. 18.
„ soaresi, iv. 21.
„ tohizonæ, iv. 12.
„ uellensis, iv. 13.
„ vittata, iv. 18.
elephantis (Barbus), ii. 78.
elephas (Campylomormyrus), i. 120.
„ (Gnathonemus), i. 120.
ellenbergeri (Mormyrus), iv. 167.
ellipsifer (Mastacembelus), iv. 132.
elongata (Perca), iii. 102.
elongatus (Barbus), ii. 75.
„ (Chelæthiops), ii. 216.
„ (Chromichthys), iii. 428.
„ (Dicentrarchus), iii. 102.
„ (Julidochromis), iii. 471.
„ (Labrax), iii. 102.
„ (Lamprologus), iii. 472.
„ (Lepidiolamprologus), iii. 472.
„ (Luciobarbus), ii. 75.
„ (Mormyrops), i. 110.
„ (Mormyrus), i. 110.
„ (Nannocharax), i. 264.
Elopidæ, i. 24.
Elops, i. 25.
„ apalike, i. 28.
„ capensis, i. 25.
„ congicus, i. 26.
„ cundinga, i. 28.
„ cyprinoides, i. 28.
„ indicus, i. 25.
„ inermis, i. 25.
„ lacerta, i. **26**; iv. 152.
„ machnata, i. 25; iv. 152.
„ purpurascens, i. 25.
„ saurus, i. **25**; iv. 152.
„ senegalensis, iv. 152.
elphinstonei (Anguilla), iii. 7.

emini (Schilbe), ii. 296.
Enantiopus, iii. 447.
„ longianalis, iii. 448.
„ melanogenys, iii. 448.
„ ochrogenys, iii. 449.
endlicheri (Polypterus), i. **10**; iv. 150.
Engraulicypris, ii. 209.
„ argenteus, ii. 212.
„ bottegi, ii. 213.
„ brevianalis, ii. **211**; iv. 280.
„ minutus, ii. 213.
„ pinguis, ii. 210.
„ sardella, ii. 210.
engycephalus (Distichodus), i. **271**; iv. 193.
engystoma (Mormyrops), i. **36**; iv. 153.
enneadactylus (Polynemus), iv. 103.
ensifer (Varicorhinus), iv. 214.
ensis (Barbus), iv. 223.
Enteromius, ii. 1.
„ potamogalis, ii. 156.
Epiplatys, iii. 40.
„ infrafasciatus, iii. 56.
„ sexfasciatus, iii. 54.
Eretmodus, iii. 495.
„ cyanostictus, iii. 495.
erlangeri (Barbus), ii. **29**; iv. 224.
Erpetoichthys, i. 17.
„ calabaricus, i. 18.
erythrodon (Spathodus), iii. 496.
esamesæ (Clarias), iv. 285.
Esox far, iii. 15.
esox (Champsochromis), iii. 435.
„ (Paratilapia), iii. 435.
Euchilichthys, ii. 486.
„ dybowskii, ii. 489.
„ guentheri, ii. 487.
„ habereri, iv. 323.
„ royauxi, ii. 488.
Eugnathichthys, i. 241.
„ eetveldii, i. **241**; iv. 188.
„ intermedius, iv. 188.
„ macroterolepis, i. **243**; iv. 188.
eumystus (Barbus), ii. 44.
eupterus (Synodontis), ii. 427.
euronotus (Mugil), iv. 86.
eurystomus (Barbus), ii. **64**; iv. 236.
„ (Synodontis), ii. 479.
eutænia (Barbus), ii. **131**; iv. 256.
Eutropius, ii. 279.
Eutropius adansonii, ii. 283.
„ altipinnis, ii. 283.
„ ansorgii, iv. 291.
„ banguelensis, ii. **282**; iv. 290.
„ bocagii, ii. 290.
„ congensis, ii. 281, 288.
„ congolensis, ii. 281.
„ debauwi, ii. 288.
„ depressirostris, ii. **291**; iv. 292.
„ grenfelli, ii. **286**; iv. 290.
„ lemairii, ii. 291.
„ liberiensis, ii. 287.
„ mandibularis, ii. 290.
„ mentalis, ii. **288**; iv. 290.
„ möbiusi, ii. 293.
„ moebii, ii. 293.
„ multilineatus, iv. 292.
„ niloticus, ii. **283**; iv. 290.
„ obtusirostris, ii. 283.
„ seraoi, iv. 292.
exiguus (Haplochilus), iii. 57.

fahaka (Crayracion), iv. 143.
„ (Tetrodon), iv. 143.
faidherbi (Chromis), iii. 190.
fairbairnii (Barbus), ii. 97.
falcarius (Arius), ii. 389.
falcatus (Labrus), iv. 2.
„ (Scomber), iv. 2.
„ (Trachynotus), iv. 2.
falcifer (Labeo), i. 327.
falciformis (Monodactylus), iii. 120.
„ (Psettus), iii. 120.
falcipinnis (Labeo), i. 327.
„ (Mugil), iv. 88
far (Esox), iii. 15.
„ (Hemirhamphus), iii. 15.
Fario, i. 166.
fario (Salmo), i. 166.
fasciata (Schilbe), ii. 294.
„ (Tilapia), iii. 215.
fasciatus (Aphanius), iii. 18.
„ (Bathybates), iii. 441.
„ (Chromis), iii. 215.
„ (Cyprinodon), iii. 18.
„ (Hemichromis), iii. **428**; iv. 335.
„ (Lamprologus), iii. 477.
„ (Lebias), iii. 18.
„ (Nannocharax), i. **281**; iv. 195.

fasciolatus (Anabas), iv. 60.
„ (Barbus), ii. 161.
„ (Barilius), ii. 200.
„ (Distichodus), i. **270**; iv. 193.
„ (Haplochilus), iii. **52**, 70; iv. 325.
„ (Petrochromis), iii. 273.
fasolt (Barbus), iv. 242.
feliceps (Galeichthys), ii. 381.
fergussonii (Barbus), ii. 59.
ferox (Bathybates), iii. 438.
ferranti (Haplochilus), iii. 47.
figuigensis (Barbus), iv. 250.
filamentosus (Chrysichthys), iv. 301.
„ (Megalops), i. 28.
„ (Synodontis), ii. 460.
finta (Alosa), i. 154.
„ (Clupea), i. 154.
flava (Lebias), iii. 18.
flavii-josephi (Chromis), iii. 302.
„ (Tilapia), iii. 303.
flavipinnis (Pelmatochromis), iii. 418.
flavomarginata (Tilapia), iii. 171.
flavomarginatus (Mastacembelus), iv. 125.
fluviatilis (Syngnathus), iii. 82.
foæ (Ectodus), iii. 266.
„ (Ophthalmotilapia), iii. 266.
fornasinii (Eleotris), iv. 21.
forskalii (Hydrocyon), i. **180**, 182; iv. 175.
„ (Labeo), i. 328, **329**, 331; iv. 205.
fouloni (Clarias), ii. **263**; iv. 288.
„ (Tilapia), iii. 206.
frater (Blennius), iv. 108.
frederici (Chromidotilapia), iii. 355.
„ (Chromys), iii. 355.
„ (Paratilapia), iii. 355.
frenatus (Mastacembelus), iv. 116.
friteli (Gnathonemus), i. 103.
fritschii (Barbus), ii. 85.
frontosa (Paratilapia), iii. 420.
frontosus (Pelmatochromis), iii. 420.
„ (Synodontis), ii. 410.
fuchsii (Alestes), i. 209.
fuelleborni (Labeo), i. 328.
„ (Synodontis), ii. 427.
fuellebornii (Tilapia), iii. 222.
Fundulus, iii. 23.
„ arnoldi, iii. 30.
„ batesii, iii. 28.
Fundulus bivittatus, iii. 24.
„ capensis, iii. 39.
„ gardneri, iii. 26.
„ guentheri, iii. 35.
„ gularis, iii. 29.
„ loennbergii, iii. 25.
„ melanospilus, iii. 34.
„ microlepis, iii. 39.
„ neumanni, iii. 35.
„ nisorius, iii. 39.
„ orthonotus, iii. **33**, 34, 35.
„ palmquistii, iii. 31.
„ sjoestedti, iii. **38**; iv. 325.
„ spurrelli, iii. 27.
„ tæniopygus, iii. 34, 35, **37**.
„ walkeri, iii. 32.
furcatus (Chrysichthys), ii. **320**; iv. 299.
furcidens (Mormyrops), i. 46.
furcifer (Lamprologus), iii. 483.
furcifera (Paratilapia), iii. 368.
fusca (Eleotris), iv. 21.
„ (Pœcilia), iv. 21.
fuscus (Ancharius), ii. 379.
„ (Culius), iv. 21.
„ (Dules), iii. 93.
„ (Hemirhombus), iv. 4.
„ (Moronopsis), iii. 93.

gabonense (Ctenopoma), iv. 55.
gabonensis (Atherina), iv. 76.
„ (Clarias), ii. 250, 252.
gabunensis (Ischnomembras), iv. 76.
gaillardi (Marcusenius), iv. 161.
Galaxias, iii. 12.
„ capensis, iii. 12.
„ punctifer, iii. 13.
„ zebratus, iii. 12.
Galaxiidæ, iii. 12.
Galeichthys, ii. 381.
„ ater, ii. 382.
„ feliceps, ii. 381.
Galeoides, iv. 103.
„ decadactylus, iv. 103.
„ polydactylus, iv. 103.
galilæa (Tilapia), iii. 167, **169**; iv. 327.
galilæus (Chromis), iii. 169.
„ (Sparus), iii. 169.
gambiensis (Synodontis), ii. **407**, 415; iv. 316.
gananensis (Barbus), ii. 37.

gardneri (Fundulus), iii. 26.
gariepinus (Clarias), ii. 228, 232; iv. 231.
„ (Silurus), ii. 228.
Gasterosteus, iv. 107.
„ aculeatus, iv. 107.
„ algeriensis, iv. 107.
„ brachycentrus, iv. 107.
„ leiurus, iv. 107.
„ ovatus, iv. 2.
„ rhombeus, iii. 123.
Gastrostei, iii. 91.
Gastrosteidæ, iv. 106.
Gastrosteus, iv. 107.
„ aculeatus, iv. 107.
geayi (Bedotia), iv. 77.
geledensis (Synodontis), ii. **458**; iv. 322.
genisquamulatus (Pelmatochromis), iv. 330.
Genyomyrus, i. 125.
„ donnyi, i. **125**; iv. 167.
geoffroyi (Citharinus), i. 291.
„ (Heterobranchus), ii. 273.
„ (Mormyrus), i. 136, 137.
Gephyrochromis, iii. 458.
„ linnelli, iii. 159.
„ moorii, iii. 458.
Gephyroglanis, ii. 344.
„ congicus, ii. 345.
„ gymnorhynchus, iv. 305.
„ habereri, iv. 305.
„ longipinnis, ii. 348.
„ ogoensis, ii. 346.
„ rotundiceps, ii. 352.
„ sclateri, ii. **346**; iv. 304.
„ tilhoi, ii. **348**; iv. 305.
gestri (Paratilapia), iii. 318.
giardi (Tilapia), iii. 221.
gibbiceps (Paratilapia), iii. 354.
„ (Steatocranus), iii. 283.
gibbosus (Barbus), ii. 121.
„ (Citharinus), i. **297**; iv. 197.
gigas (Arius), ii. 386.
gigliolii (Hemichromis), iii. 302.
gilchristi (Barbus), ii. 88.
„ (Gobius), iv. 27.
gilli (Gnathonemus), i. 114.
girardi (Barbus), iv. 235.
giuris (Glossogobius), iv. 24.
„ (Gobius), iv. 24.
gliroides (Mormyrus), i. 58.
„ (Petrocephalus), i. 58.
Glossogobius, iv. 22.
„ giuris, iv. 24.
Glyphisodon zillii, iii. 197.
Gnathendalia vulnerata, ii. 148.
Gnathonemus, i. 94.
„ abadii, i. 118.
„ angolensis, i. **109**; iv. 165.
„ bentleyi, i. 103.
„ brucii, iv. 166.
„ bruyerii, i. 105.
„ curvirostris, i. 123.
„ cyprinoides, i. **110**; iv. 167.
„ elephas, i. 120.
„ friteli, i. 103.
„ gilli, i. 114.
„ greshoffi, i. 117.
„ ibis, i. 122.
„ kutuensis, i. 115.
„ lambouri, i. 97.
„ leopoldianus, i. **102**; iv. 164.
„ livingstonii, i. 104.
„ longibarbis, i. **100**; iv. 164.
„ macrolepidotus, i. **112**; iv. 167.
„ mento, i. **106**; iv. 164.
„ mirus, i. **119**; iv. 167.
„ monteiri, i. **105**; iv. 164.
„ moorii, i. **96**; iv. 163.
„ niger, i. 101.
„ numenius, i. 124.
„ petersii, i. **99**; iv. 164.
„ pictus, i. 113.
„ rhynchophorus, i. 121.
„ schilthuisiæ, i. 98.
„ senegalensis, i. **108**; iv. 165.
„ stanleyanus, i. **107**; iv. 165.
„ tamandua, i. **118**; iv. 167.
„ thomasi, iv. 164.
„ ussheri, i. 116.
Gobiidæ, iv. 7.
Gobiiformes, iii. 90.
Gobio hirticeps, i. 351.
„ quadrimaculatus, i. 351.
Gobioides, iv. 41.
„ ansorgii, iv. 42.
gobionides (Barbus), ii. 148.
Gobius, iv. 22.

Gobius æneofuscus, iv. 30, 31.
„ banana, iv. 30.
„ bicolor, iv. 35.
„ bustamantæi, iv. 29.
„ catebus, iv. 24.
„ dewaalii, iv. 26.
„ gilchristi, iv. 27.
„ giuris, iv. 24.
„ grandidieri, iv. 24.
„ guineensis, iv. 31.
„ gymnauchen, iv. 28.
„ hilgendorfi, iv. 38.
„ hypselosoma, iv. 36.
„ isognathus, iv. 36.
„ kokius, iv. 24.
„ kora, iv. 24.
„ kurpah, iv. 24.
„ lagocephalus, iv. 45.
„ macrorhynchus, iv. 29.
„ madagascariensis, iv. 29.
„ maderensis, iv. 35.
„ maindroni, iv. 27.
„ melanio, iv. 35.
„ melanopterus, iv. 36.
„ microps, iv. 26.
„ niger, iv. 35.
„ nigri, iv. 34.
„ nigripinnis, iv. 36.
„ nudiceps, iv. 28.
„ occidentalis, iv. 39.
„ ocellaris, iv. 36.
„ paganellus, iv. 35.
„ platycephalus, iv. 24.
„ polyzona, iv. 38.
„ reticulatus, iv. 26.
„ rhodopterus, iv. 26.
„ russelli, iv. 24.
„ samberanensis, iv. 32.
„ schlegelii, iv. 37.
„ soporator, iv. 33.
„ spectabilis, iv. 24.
„ tajasica, iv. 31.
„ vergeri, iv. 32.
goliath (Hydrocyon), i. 184.
Gonocephalus, ii. 341.
goreensis (Trachynotus), iv. 3.
gorguari (Barbus), ii. 75.
„ (Luciobarbus), ii. 75.
goro (Mastacembelus), iv. 121.
goudotii (Hemithylacus), iii. 85.
gracilior (Haplochromis), iii. 293.
grahami (Haplochilus), iii. 75.
„ (Tilapia), iii. 211.
grammatophorus (Amphilius), iv. 308.
Grammatotria, iii. 453.
„ lemairii, iii. 454.
Grammistes servus, iii. 114.
grandidieri (Gobius), iv. 24.
„ (Ptychochromis), iii. 258.
„ (Tilapia), iii. 258.
grandis (Amphilius), ii. **355**; iv. 306.
grandisquamis (Alestes), i. 220.
„ (Mormyrus), i. 96.
„ (Mugil), iv. 96.
grandoculis (Tilapia), iii. 266.
granti (Haplochromis), iii. 342.
„ (Paratilapia), iii. 342.
granulosus (Synodontis), ii. 413.
graueri (Bathybates), iii. 437.
„ (Chrysichthys), iv. 298.
„ (Haplochromis), iii. 298.
gravoti (Auchenoglanis), iv. 312.
greenii (Labeo), i. **334**; iv. 205.
gregorii (Barbus), ii. **45**; iv. 230.
„ (Labeo), i. 321.
grenfelli (Eutropius), ii. **286**; iv. 290.
greshoffi (Gnathonemus), i. 117.
„ (Mastacembelus), iv. 140.
„ (Mormyrus), i. 117.
„ (Synodontis), ii. 452.
griseum (Diagramma), iii. 128.
gruveli (Barbus), iv. 237.
guachancho (Sphyræna), iv. 105.
guamensis (Dules), iii. 93.
guatimalensis (Citharichthys), iv. 4.
gudaricus (Barbus), ii. 40.
guentheri (Atopochilus), ii. 487.
„ (Barilius), ii. 205.
„ (Chromis), iii. 162.
„ (Clarias), ii. 232.
„ (Euchilichthys), ii. 487.
„ (Fundulus), iii. 35.
„ (Hemichromis), iii. 388.
„ (Mormyrus), i. 128.
„ (Mugil), iv. 80.
„ (Pelmatochromis), iii. 385, **388**.
„ (Sphyræna), iv. 105.
„ (Synodontis), ii. 474.
guiarti (Astatotilapia), iii. 336.
„ (Paratilapia), iii. 336.
„ (Tilapia), iii. 336.
guile (Chalceus), i. 206.

guile (Myletes), i. 205.
guineensis (Barbus), iv. 255.
„ (Chromis), iii. 201.
„ (Gobius), iv. 31.
„ (Haligenes), iii. 201.
„ (Tilapia), iii. 201.
guirali (Barbus), ii. **142**; iv. 259.
„ (Pimelodus), ii. 373.
gularis (Fundulus), iii. 29.
gulielmi (Barbus), iv. 225.
gunningi (Barbus), iv. 243.
gurneyi (Barbus), ii. 89, **150**; iv. 261.
guttatus (Auchenoglanis), ii. 364.
„ (Hemichromis), 431.
„ (Parauchenoglanis), ii. 364.
„ (Pimelodus), ii. 364.
„ (Synodontis), ii. 436, **447**.
Gymnallabes, ii. 270.
„ apus, ii. 271.
„ typus, ii. **270**; iv. 289.
Gymnarchinæ, i. 30.
Gymnarchus, i. 144.
„ niloticus, i. **144**; iv. 170.
Gymnauchen (Gobius), iv. 28.
gymnorhynchus (Gephyroglanis), iv. 305.
Gymnostomus, i. 352.
„ dembeensis, i. 345.

habereri (Barbus), iv. 239.
„ (Bryconæthiops), iv. 176.
„ (Chrysichthys), iv. 304.
„ (Euchilichthys), iv. 323.
„ (Gephyroglanis), iv. 305.
„ (Mormyrus), iv. 168.
„ (Paratilapia), iii. 407.
Haligenes, iii. 138.
„ guineensis, iii. 201.
„ tristrami, iii. 197.
hamiltonii (Barbus), iv. 251.
hammonis (Cyprinodon), iii. 19.
Haplochilichthys spilauchen, iii. 61.
Haplochilus, iii. 40.
„ acuticaudatus, iii. 72.
„ annulatus, iv. 326.
„ ansorgii, iii. 53.
„ antinorii, iii. 44.
„ atripinna, iii. 69.
„ bifasciatus, iii. **76**: iv. 325.
„ brucii, iii. 26.
„ cabindæ, iii. 68.
Haplochilus calliurus, iii. 59.
„ cameronensis, iii. **47**, 59; iv. 325.
„ chaperi, iii. 56.
„ chevalieri, iii. 77.
„ christyi, iii. 46.
„ decorsii, iii. 57.
„ elegans, iii. 58, 59.
„ exiguus, iii. 57.
„ fasciolatus, iii. **52**, 70; iv. 325.
„ ferranti, iii. 47.
„ grahami, iii. 75.
„ homalonotus, iii. 50.
„ hutereaui, iii. 63.
„ infrafasciatus, iii. 54.
„ johnstonii, iii. 69.
„ katangæ, iii. 67.
„ kingii, iii. 64.
„ liberiensis, iii. 48.
„ loati, iii. 63.
„ lujæ, iii. 49.
„ macrostigma, iii. 73.
„ macrurus, iii. **67**; iv. 325.
„ marni, iii. 70.
„ moeruensis, iii. 66.
„ multifasciatus, iii. 75.
„ myaposæ, iii. 44.
„ nigricans, iii. 74.
„ nuchimaculatus, iii. 50.
„ petersii, iii. **59**, 71.
„ playfairii, iii. 51.
„ pumilus, iii. 45.
„ schoelleri, iii. 65.
„ senegalensis, iii. **71**, 72, 73.
„ sexfasciatus, iii. **54**, 56.
„ singa, iii. 78.
„ spilargyreus, iii. 72.
„ spilauchen, iii. **61**; iv. 325.
„ striatus, iii. 60.
„ tanganicanus, iii. 80.
Haplochromis, iii. 284.
„ alluaudi, iii. 305.
„ angustifrons, iii. 292.
„ bicolor, iii. 346.
„ crassilabris, iii. 345.
„ desfontainesii, iii. **302**; iv. 330.
„ gracilior, iii. 293.
„ granti, iii. 342.
„ graueri, iii. 298.

Haplochromis ishmaeli, iii. 293.
„ jeanneli, iii. 291.
„ livingstonii, iii. 286.
„ moeruensis, iii. 307.
„ moffati, iii. **300**; iv. 330.
„ nigrescens, iii. 296.
„ nuchisquamulatus, iii. 290.
„ percoides, iii. 296.
„ roberti, iii. 295.
„ schubotzi, iii. 288.
„ stanleyi, iii. 295.
„ strigigena, iii. 299.
„ venustus, iii. 287.
Haplomi, iv. 12.
Haplotaxodon, iii. 443.
„ microlepis, iii. 444.
Haplotilapia, iii. 308.
hargeri (Amphilius), ii. 358.
harringtoni (Marcusenius), i. 78.
harringtonii (Barbus), ii. 61.
harterti (Barbus), ii. 81.
hasselquistii (Alestes), i. 193, 195.
„ (Clarias), ii. 226.
„ (Mormyrus), i. **128**; iv. 167.
„ (Myletes), i. 193.
„ (Schilbe), ii. 283.
haswellii (Dules), iii. 93.
haugi (Synodontis), ii. 436.
„ (Tilapia), iii. 178.
haullevillii (Petrocephalus), iv. 157.
hecqui (Lamprologus), iii. 467.
„ (Xenochromis), iii. 502.
hedleyi (Kuhlia), iii. 93.
Helicobranchus, i. 149.
Hemichromis, iii. 308, 427.
„ afer, iii. 325.
„ angolensis, iii. 408.
„ auritus, iii. 428.
„ bimaculatus, iii. **430**; iv. 335.
„ bloyeti, iii. 302.
„ cavifrons, iii. 419.
„ desguezi, iii. 428.
„ dimidiatus, iii. 360.
„ fasciatus, iii. **428**; iv. 335.
„ gigliolii, iii. 302.
„ guentheri, iii. 388.
„ guttatus, iii. 431.
„ intermedius, iii. 363.
„ jallæ, iii. 328.
„ leiguardii, iii. 428.
Hemichromis letourneuxii, iii. 431.
„ livingstonii, iii. 286.
„ longiceps, iii. 434.
„ longirostris, iii. 332.
„ modestus, iii. 326.
„ retrodens, iii. 347.
„ robustus, iii. 328.
„ rolandi, iii. 431.
„ saharæ, iii. 431.
„ schwebischi, iii. **365**, 398.
„ serranus, iii. 334.
„ subocellatus, iii. 399.
„ tersquamatus, iii. 388.
„ voltæ, iii. 388.
hemipleurogramma (Barbus), ii. **150**; iv. 261.
Hemirhamphus, ii. 14, 16.
„ commersonii, iii. 15, 16.
„ dispar, iii. 16.
„ far, iii. 15.
Hemirhombus fuscus, iv. 4.
„ stampflii, iv. 4.
Hemistichodus, i. 253.
„ vaillanti, i. 253.
Hemisynodontis, ii. 272.
„ membranaceus, ii. 474.
„ nigrita, ii. 429.
„ schall, ii. 404.
Hemithylacus, iii. 84.
„ goudotii, iii. 85.
„ leiaspis, iii. 85.
Hemitilapia, iii. 489.
„ bayoni, iii. 491.
„ oxyrhynchus, iii. 489.
„ materfamilias, iii. 492.
henryi (Isichthys), i. **59**; iv. 157.
„ (Mormyrops), i. 59.
„ (Mormyrus), i. 59.
hepsetus (Atherina), iv. 74.
herse (Mormyrus), i. 128.
Heterobranchus, ii. 272.
„ anguillaris, ii. 235.
„ bidorsalis, ii. **273**; iv. 290.
„ geoffroyi, ii. 273.
„ intermedius, ii. 273.
„ isopterus, ii. **276**; iv. 290.
„ laticeps, ii. 274.
„ longfilis, ii. 274.
„ macrònema, ii. 276.
„ senegalensis, ii. 273.

Heteromormyrus, i. 60.
Heterotis, i. 149.
„ adansonii, i. 149.
„ ehrenbergii, i. 149.
„ niloticus, i. **149**; iv. 171.
heudeloti (Arius), ii. 387.
„ (Chromis), iii. 173.
„ (Tilapia), iii. **173**; iv. 327.
heuglinii (Clarotes), ii. 342.
hildebrandti (Anguilla), iii. 8.
„ (Mormyrus), i. 136.
hilgendorfi (Clarias), iv. 287.
„ (Gobius), iv. 38.
„ (Petersius), i. 232.
hindii (Barbus), ii. **56**; iv. 231, 234.
„ (Discognathus), i. **350**; iv. 212.
Hippopotamyrus, i. 60.
„ castor, i. 77.
hirticeps (Discognathus), i. 351.
„ (Gobio), i. 351.
hoefleri (Mugil), iv. 96.
holargyreus (Alestes), i. 227.
„ (Micralestes), i. 227.
Holocentrus caudavittatus, iii. 98.
„ jarbua, iii. 113.
„ servus, iii. 113.
holotænia (Barbus), ii. **139**; iv. 258.
holubi (Barbus), ii. **22**; iv. 223.
homalonotus (Haplochilus), iii. 50.
horie (Labeo), i. 306.
horii (Bathybates), iii. 440.
„ (Chromis), iii. 228.
„ (Tilapia), iii. 228.
Hucho, i. 166.
humeralis (Barbus), ii. 154.
„ (Eleotris), iv. 11.
humeratus (Synodontis), ii. 430.
humilior (Stomatorhinus), i. 89.
„ (Tilapia), iii. 230.
humilis (Alestes), i. 211.
„ (Barbus), ii. 160.
„ (Chromis), iii. 213.
„ (Kuhlia), iii. 96.
„ (Micralestes), i. 226.
„ (Pelmatochromis), iv. 333.
„ (Tilapia), iii. 213.
hunteri (Oreochromis), iii. 149.
„ (Tilapia), iii. 149.
hursensis (Barbus), ii. 46.
hutereaui (Haplochilus), iii. 63.
„ (Marcusenius), iv. 160.
hyalosoma (Atherina), iv. 74.
Hydrargyra, iii. 23.
„ maculata, iii. 33.
Hydrocynus, i. 179.
Hydrocyon, i. 179.
„ brevis, i. **186**; iv. 176.
„ dentex, i. 180.
„ forskalii, i. **180**, 182, 186; iv. 175.
„ goliath, i. 184.
„ lineatus, i. **182**; iv. 176.
„ vittatus, i. 182, 184.
„ vittiger, i. 184.
Hydrocyoninæ, i. 175.
Hydrocyonoides, i. 177.
„ cuvieri, i. 177.
Hyperopisus, i. 142.
„ bebe, i. **142**; iv. 170.
„ dorsalis, i. 142.
„ occidentalis, i. 142.
„ tenuicauda, i. 142; iv. **170**.
Hypophthalmus niloticus, ii. 283.
Hyporhamphus, iii. 14.
hypostomatus (Distichodus), i. **264**; iv. 193.
Hypotremi, i. 3.
hypselopterus (Mugil), iv. 96.
hypselosoma (Gobius), iv. 36.
Hypsifario, i. 166.

ibericus (Lebias), iii. 21.
iberus (Cyprinodon), iii. 21.
ibis (Gnathonemus), i. 122.
Ichthyoborinæ, i. 175.
Ichthyoborus, i. 251.
„ besse, i. **251**; iv. 189.
„ microlepis, i. 251.
Ichthyocoris, iv. 108.
„ varus, iv. 109.
„ pollinii, iv. 109.
ikapor (Plotosus), ii. 278.
ilgi (Barbus), ii. 63.
Ilisha, i. 162.
„ indica, i. 163.
imberi (Alestes), i. 208, **209**; iv. 181.
„ (Brachyalestes), i. 209.
indica (Ilisha), i. 163.
„ (Pellona), i. 163.
indicus (Elops), i. 25.
„ (Megalops), i. 28.

indicus (Platygaster), i. 163.
inermis (Barbus), ii. 152.
„ (Elops), i. 25.
infrafasciatus (Epiplatys), iii. 56.
„ (Haplochilus), iii. 54.
innocens (Barbus), ii. 160.
inornata (Tilapia), iii. 263.
insignis (Ophiocephalus), iv. 72.
intermedia (Paratilapia), iii. 363.
„ (Phractura), ii. 503.
intermedius (Alestes), i. **201**; iv. 178.
„ (Barbus), ii. 45, **59**, 64.
„ (Eugnathichthys), iv. 188.
„ (Hemichromis), iii. 363.
„ (Heterobranchus), ii. 273.
„ (Nannocharax), i. **282**; iv. 195.
„ (Pelmatochromis), iv. 332.
„ (Phago), i. 247.
„ (Schilbe), ii. 293.
interruptus (Micralestes), i. 229.
Ischnomembras, iv. 73.
„ gabunensis, iv. 76.
ishmaeli (Haplochromis), iii. 293.
Isichthys, i. 59.
„ henryi, i. **59**; iv. 157.
isidori (Marcusenius), i. **75**; iv. 161.
„ (Mormyrus), i. 75.
„ (Petrocephalus), i. 75.
„ (Schilbe), ii. 296.
isognathus (Gobius), iv. 36.
isopterus (Heterobranchus), ii. **276**; iv. 290.
iturii (Auchenoglanis), iv. 311.
„ (Synodontis), iv. 316.

jacksonii (Alestes), iv. 180.
„ (Amphilius), iv. 307.
„ (Barbus), ii. 105, **106**, 107.
jæ (Barbus), ii. 184.
„ (Mormyrus), iv. 168.
jaensis (Clarias), ii. **242**; iv. 283.
jallæ (Chromis), iii. 213.
„ (Hemichromis), iii. 328.
„ (Tilapia), iii. 213.
jarbua (Holocentrus), iii. 113.
„ (Sciæna), iii. 113.
„ (Therapon), iii. 113.
jarsinus (Barbus), ii. **62**; iv. 236.
jayakari (Diagramma), iii. 128.
jeanneli (Astatotilapia), iii. 291.
„ (Haplochromis), iii. 291.
jello (Sphyræna), iv. 105.
jentinki (Paratilapia), iii. 383.
„ (Pelmatochromis), iii. **383**; iv. 332.
joannisii (Mormyrus), i. 48.
johannæ (Anguilla), iii. 7.
johnstoni (Astatotilapia), iii. 249, 250.
„ (Chromis), iii. 249.
johnstonii (Barbus), ii. 90.
„ (Discognathus), i. 346.
„ (Docimodus), iii. 282.
„ (Haplochilus), iii. 69.
„ (Tilapia), iii. **249**, 250.
jubelini (Mormyrus), i. **140**; iv. 169.
„ (Pristipoma), iii. 126.
Jugulares, iii. 91.
Julidochromis, iii. 484.
„ boulengeri, iii. 471.
„ elongatus, iii. 471.
„ ocellatus, iii. 462.
„ ornatus, iii. 484.

kafuensis (Paratilapia), iii. 320.
„ (Tilapia), iii. 153.
kannume (Mormyrus), i. **134**; iv. 169.
„ (Scrophicephalus), i. 134.
karkensis (Barbus), iv. 272.
kassamensis (Barbus), ii. 30.
katangæ (Barbus), ii. 104.
„ (Haplochilus), iii. 67.
kaupi (Syngnathus), iii. 86.
keatingii (Petrocephalus), i. 55.
kerstenii (Barbus), ii. **130**; iv. 255.
kessleri (Barbus), ii. 131, **138**, 139; iv. 258.
„ (Puntius), ii. 138.
kimberleyensis (Barbus), iv. 226.
kingii (Haplochilus), iii. 64.
kingsleyæ (Alestes), i. **212**; iv. 181.
„ (Anabas), iv. 62.
„ (Barilius), ii. 202.
„ (Chromidotilapia), iii. 398.
„ (Chrysichthys), ii. 324.
„ (Clarias), ii. 260.
„ (Ctenopoma), iv. 63.
„ (Marcusenius), i. **65**; iv. 158.
„ (Mormyrus), i. 65.
„ (Pelmatochromis), iii. 398.

kirkii (Arius), ii. 389.
„ (Chromis), iii. 251.
„ (Ctenochromis), iii. 251.
„ (Labeo), i. 328.
„ (Tilapia), iii. 251.
kivuensis (Barbus), iv. 226.
klunzingeri (Eleotris), iv. 21.
Kneria, i. 169.
„ angolensis, i. **170**; iv. 173.
„ cameronensis, i. **171**; iv. 174.
„ spekii, i. **171**; iv. 174.
Kneriidæ, i. 169.
kokius (Gobius), iv. 24.
kora (Gobius), iv. 24.
kotschyi (Alestes), i. 195.
kottæ (Tilapia), iii. 200.
krapfi (Barbus), ii. **54**; iv. 231.
krefftii (Amphilius), ii. 356.
kribensis (Eleotris), iv. 14.
„ (Pelmatochromis), iii. 400.
ksibi (Barbus), ii. 111.
Kuhlia, iii. 92.
„ arge, iii. 95.
„ boninensis, iii. 98.
„ cærulescens, iii. 93.
„ caudovittata, iii. 98.
„ ciliata, iii. 93.
„ humilis, iii. 96.
„ malo, iii. 96.
„ proxima, iii. 97.
„ rupestris, iii. 93.
„ sandvicensis, iii. 97.
„ sauvagii, iii. 93.
„ splendens, iii. 97.
„ sterneckii, iii. 95.
„ tæniura, iii. 95.
kundinga (Megalops), i. 28.
kurpah (Gobius), iv. 24.
kurumani (Barbus), ii. 144.
kutuensis (Gnathonemus), i. 115.

Labeo, i. 300.
„ altivelis, i. **309**; iv. 198.
„ annectens, i. **336**; iv. 205.
„ ansorgii, i. **341**; iv. 210.
„ barbatus, i. 342.
„ batesii, iv. 202.
„ bottegi, iv. 204.
„ boulengeri, iv. 198.
„ brachypoma, i. 324.
Labeo cafer, i. 339.
„ capensis, i. **340**; iv. 209.
„ chariensis, i. **337**; iv. 206.
„ congoro, i. 319.
„ coubie, i. 309, 313, **317**; iv. 199.
„ cyclorhynchus, i. 326.
„ cylindricus, i. **331**; iv. 204.
„ darlingi, i. 321.
„ falcifer, i. 327.
„ falcipinnis, i. 327.
„ forskalii, i. 328, **329**, 331; iv. 205.
„ fuelleborni, i. 323.
„ greenii, i. **334**; iv. 205.
„ gregorii, i. 321.
„ horie, i. 306.
„ kirkii, i. 328.
„ lineatus, i. **311**; iv. 198.
„ longipinnis, i. **316**; iv. 199.
„ lukulæ, i. **335**; iv. 205.
„ macrostoma, i. 325.
„ mesops, i. **313**, 331.
„ montanus, i. 331.
„ nasus, i. 333.
„ neumanni, i. 320.
„ nigricans, iv. 210.
„ niloticus, i. **304**, 306, 317.
„ obscurus, i. **338**; iv. 207.
„ ogunensis, iv. 207.
„ parvulus, iv. 205.
„ parvus, i. 337.
„ percivali, iv. 201.
„ rocadasi, iv. 203.
„ rosæ, i. **312**; iv. 198.
„ rubromaculatus, iv. 209.
„ rubropunctatus, iv. 199.
„ ruddi, i. **314**; iv. 199.
„ seeberi, iv. 211.
„ selti, i. 314.
„ senegalensis, i. **308**; iv. 198.
„ sicheli, i. 339.
„ steindachneri, i. 317.
„ stenningi, iv. 208.
„ stictolepis, iv. 199.
„ tenuirostris, i. 340.
„ transvaalensis, iv. 199.
„ umbratus, i. **339**; iv. 208.
„ varicorhinus, i. 356.
„ velifer, i. 315.
„ victorianus, i. **322**, 323; iv. 202.
„ vulgaris, i. 304.
„ walkeri, i. 324.

Labeo weeksii, i. **310**; iv. 198.
labeo (Synodontis), ii. **449**, 450.
Labeobarbus, ii. 1.
„ aureus, ii. 90.
„ nedgia, ii. 51.
„ zambezensis, ii. 91.
labialis (Barbus), iv. 262.
labiata (Anguilla), iii. 6, 7.
„ (Muræna), iii. 7.
„ (Tilapia), iii. 280.
labiatus (Barbus), ii. 55.
„ (Lobochilotes), iii. 280.
„ (Mormyrops), i. 110.
„ (Mormyrus), i. 110.
Labrax, iii. 101.
„ diacanthus, iii. 102.
„ elongatus, iii. 102.
„ linnei, iii. 102.
„ lupus, iii. 102.
„ orientalis, iii. 104.
„ punctatus, iii. 103.
„ schoenleinii, iii. 104.
„ vulgaris, iii. 102.
labrax (Dicentrarchus), iii. 102.
„ (Morone), iii. 102.
„ (Perca), iii. 102.
„ (Roccus), iii. 102.
„ (Sciæna), iii. 102.
labrosus (Mugil), iv. 90.
Labrus desfontainii, iii. 302.
„ falcatus, iv. 2.
Labyrinthici, iii. 91.
lacerda (Mormyrus), i. 128.
lacerta (Elops), i. **26**; iv. 152.
lacrimosa (Tilapia), iii. 234.
lacustris (Atherina), iv. 74.
læviceps (Clarias), ii. **260**; iv. 287.
lagensis (Barynotus), ii. 100.
lagocephalum (Sicydium), iv. 45.
lagocephalus (Gobius), iv. 45.
„ (Sicyopterus), iv. 45.
lagoensis (Barbus), ii. 100.
„ (Chrysichthys), ii. 322.
lambouri (Gnathonemus), i. 97.
lampii (Amphilius), iv. 309.
Lamprichthys, iii. 80.
„ tanganicanus, iii. 80.
Lamprologus, iii. 459.
„ boulengeri, iii. 471.
„ brevianalis, iii. 462.
„ brevis, iii. 478.
Lamprologus callipterus, iii. 476.
„ calliurus, iii. 481.
„ compressiceps, iii. 479.
„ congolensis, 464.
„ cunningtoni, iii. 474.
„ elongatus, iii. 472.
„ fasciatus, iii. 477.
„ furcifer, iii. 483.
„ hecqui, iii. 467.
„ lemairii, iii. 475.
„ marginatus, iii. 463.
„ mocquardii, iii. 466.
„ modestus, iii. 469.
„ mondabu, iii. 470.
„ moorii, iii. 478.
„ multifasciatus, iii. 468.
„ pleurostigma, iii. 473.
„ reticulatus, iii. 482.
„ steindachneri, iii. 471.
„ tæniurus, iii. 480.
„ tetracanthus, iii. 463.
„ tretocephalus, iii. 466.
„ tumbanus, iii. 465.
lamta (Discognathus), i. 349.
lapradii (Polypterus), i. **7**; iv. 149.
Larimus, iii. 130.
„ auritus, iii. 130.
lata (Tilapia), iii. 190.
lateralis (Alestes), i. **204**; iv. 179.
„ (Chromis), iii. 169.
„ (Nannocharax), i. 283.
„ (Pelmatochromis), iii. 385.
„ (Tilapia), iii. 169.
lateristriga (Chromis), iii. 253, 360.
„ (Tilapia), iii. 253.
Lates, iii. 105.
„ angustifrons, iii. 109.
„ mariæ, iii. 108.
„ microlepis, iii. 108.
„ niloticus, iii. 105.
laticeps (Allabenchelys), iv. 288.
„ (Bagrus), ii. 342.
„ (Barbus), ii. **128**; iv. 255.
„ (Clarotes), ii. 342.
„ (Heterobranchus), ii. 274.
„ (Pimelodus), ii. 342.
„ (Sicydium), iv. 44.
latifrons (Tilapia), iii. 190.
latirostris (Anguilla), iii. 5.
„ (Barbus), ii. 64.
„ (Varicorhinus), iv. 220.

latiscutatus (Arius), ii. **385**, 386.
latus (Chromis), iii. 190.
„ (Citharinus), i. **295**; iv. 197.
„ (Perca), iii. 105.
layardi (Stromatoidea), iii. 120.
lazera (Clarias), ii. 232, **235**; iv. 281.
Lebias, iii. 18.
„ calaritana, iii. 18.
„ dispar, iii. 20.
„ fasciatus, iii. 18.
„ flava, iii. 18.
„ ibericus, iii. 21.
„ lineopunctata, iii. 18.
„ sarda, iii. 18.
lebretoni (Eleotris), iv. 9.
leiaspis (Hemithylacus), iii. 85.
„ (Syngnathus), iii. 85.
leiguardii (Hemichromis), iii. 428.
leiogaster (Tetrodon), iv. 146.
Leiosynodontis, ii. 391.
„ maculosus, ii. 404.
leiurus (Gasterosteus), iv. 107.
lemairii (Alestes), i. 209.
„ (Eutropius), ii. 291.
„ (Grammatotria), iii. 454.
„ (Lamprologus), iii. 475.
Lentipes, iv. 46.
„ bustamantæi, iv. 46.
leonensis (Barbus), iv. 273.
„ (Eleotris), iv. 15.
„ (Pellonula), iv. 172.
leopardinus (Synodontis), iv. 320.
leopoldianus (Gnathonemus), i. **102**; iv. 164.
„ (Petersius), i. 235.
lepasseti (Salmo), i. 166.
Lepidiolamprologus, iii. 459.
„ elongatus, iii. 472.
Lepidosiren annectens, i. 20, 21.
„ arnaudii, i. 21.
Lepidosirenidæ, i. 19.
lepidotus (Barbus), ii. 26.
„ (Cyprinus), ii. 26.
lepidura (Tilapia), iii. 181.
lepidurus (Pelmatochromis), iii. 385.
Leptocypris, ii. 190.
„ modestus, ii. 190.
Leptoglanis, ii. 350.
„ rotundiceps, ii. 352.
„ xenognathus, ii. 351.
leptopogon (Barbus), ii. 109.
leptorhynchus (Distichodus), i. 277.
leptosoma (Barbus), ii. 50.
„ (Paratilapia), ii. 372.
leptura (Andersonia), ii. 510.
„ (Asprotilapia), iii. 279.
lepturus (Mormyrus), i. 96.
leroyi (Amphilius), ii. 355.
„ (Chimarrhoglanis), ii. 357.
lethrinus (Chromis), iii. 254.
„ (Tilapia), iii. 254.
letourneuxii (Hemichromis), iii. 431.
Leuciscus, ii. 188.
„ bibie, ii. 215.
„ callensis, ii. 188.
„ chaignoni, ii. 188, **189**.
„ niloticus, ii. 193.
„ thebensis, ii. 193.
„ zambesensis, ii. 198.
leuciscus (Alestes), i. 206.
levaillantii (Chromys), iii. 320.
lhuysii (Marcusenius), i. 70.
„ (Mormyrus), i. 70.
liaspis (Cœlonotus), iii. 85.
Liauchenoglanis, iv. 314.
„ maculatus, iv. 314.
liberiensis (Barbus), ii. 163.
„ (Clarias), ii. **258**; iv. 286.
„ (Eutropius), ii. 287.
„ (Haplochilus), iii. 48.
„ (Mastacembelus), iv. 119.
„ (Mormyrus), i. 67.
liebrechtsii (Alestes), i. 198.
lindica (Phractura), ii. 500.
lineatus (Doryichthys), iii. 83.
„ (Hydrocyon), i. **182**; iv. 176.
„ (Labeo), i. **311**; iv. 198.
„ (Mugil), iv. 80.
„ (Plotosus), ii. 278.
„ (Tetrodon), iv. 143.
lineolatus (Barbus), iv. 223.
„ (Mormyrops), i. 42.
lineomaculatus (Barbus), ii. 159.
lineopunctata (Lebias), iii. 18.
linnei (Labrax), iii. 102.
linnelli (Barbus), ii. 53.
„ (Gephyrochromis), iii. 159.
„ (Tilapia), iii. 159.
liocephalus (Clarias), ii. **246**; iv. 283.
litamba (Barbus), ii. **143**; iv. 259.
livingstonii (Astatotilapia), iii. 286.
„ (Chromys), iii. 328.

livingstonii (Gnathonemus), i. 104.
„ (Haplochromis), iii. 286.
„ (Hemichromis), iii. 286.
„ (Paratilapia), iii. 286.
„ (Tilapia), iii. 243.
Liza, iv. 78.
„ alosoides, iv. 84.
loati (Barilius), ii. 203.
„ (Haplochilus), iii. 63.
Lobochilotes, iii. 280.
„ labiatus, iii. 280.
lobochilus (Barbus), ii. 92.
lobogenys (Barbus), ii. 33.
loennbergii (Fundulus), iii. 25.
„ (Mastacembelus), iv. 120.
longianalis (Ectodus), iii. 448.
„ (Enantiopus), iii. 448.
„ (Marcusenius), i. **69**; iv. 159.
longibarbis (Chrysichthys), ii. **330**; iv. 303.
„ (Chrysobagrus), ii. 330.
„ (Gnathonemus), i. **100**; iv. 164.
„ (Mormyrus), i. 100.
longicauda (Allabenchelys), ii. **267**; iv. 288.
„ (Barbus), i. **121**; iv. 253.
„ (Mastacembelus), iv. 139.
„ (Phractura), ii. 504.
longicaudatus (Clariallabes), iv. 289.
longiceps (Auchenoglanis), iv. 312.
„ (Champsochromis), iii. 434.
„ (Clarias), ii. 235.
„ (Hemichromis), iii. 434.
„ (Paratilapia), iii. 434.
longilīlis (Heterobranchus), ii. 274.
„ (Parailia), ii. **303**; iv. 297.
longimanus (Paratilapia), iii. 319.
longior (Clarias), ii. 249.
longipes (Mormyrops), i. 35.
„ (Mormyrus), i. 35.
longipinnis (Alestes), i. **202**, 203, 236; iv. 178.
„ (Brachyalestes), i. 202.
„ (Gephyroglanis), ii. 348.
„ (Labeo), i. **316**; iv. 199.
„ (Mormyrus), i. 136.
„ (Scrophicephalus), i. 136.
longirostris (Amphilius), ii. **359**; iv. 308.
„ (Anoplopterus), ii. 359.
„ (Barilius), ii. 195.
longirostris (Hemichromis), iii. 332.
„ (Mormyrus), i. 136, **139**, 140; iv. 169.
„ (Paratilapia), iii. 332.
„ (Pelmatochromis), iii. 395.
„ (Synodontis), ii. 448.
longiventralis (Cunningtonia), iii. 273.
Lophobranchii, iii. 81.
loricatus (Phago), i. 247.
losera (Odaxothrissa), i. 160.
lowei (Polypterus), iv. 151.
luazomelæ (Barbus), iv. 254.
lubina (Chanos), i. 164.
Luciobarbus, ii. 1.
„ elongatus, ii. 75.
„ gorguari, ii. 75.
Luciolates, iii. 110.
„ brevior, iii. 111.
„ stappersii, iii. 110.
lucius (Barbus), iv. 240.
lucullæ (Tilapia), iii. 224.
luebberti (Paratilapia), iii. 350.
lujæ (Barbus), iv. 261.
„ (Barilius), ii. 196.
„ (Haplochilus), iii. 49.
lukondo (Barbus), iv. 255.
lukulæ (Labeo), i. **335**; iv. 205.
lumiensis (Barbus), ii. 125.
lunatus (Cyprinodon), iii. 20.
lupulus (Blennius), iv. 109.
lupus (Centropomus), iii. 102.
„ (Labrax), iii. 102.
lusosso (Distichodus), i. **277**; iv. 194.
Lutodeira, i. 164.
„ chanos, i. 164.
„ salmonea, i. 164.
Lycocyprinus, iii. 40.

mabusi (Chrysichthys), ii. 336.
machnata (Argentina), i. 25.
„ (Elops), i. 25; iv. 152.
macmillani (Barbus), ii. 67.
macracanthus (Ambassis), iii. 112.
„ (Clarias), ii. 235.
macrocentra (Tilapia), iii. 169.
macrocephala (Muræna), iii. 9.
„ (Paratilapia), iii. 317.
„ (Tilapia), iii. **176**; iv. 328.
macrocephalus (Atopochilus), ii. 491.
„ (Chromis), iii. 176.

macrocephalus (Melanogenes), iii. 176.
macrochir (Tilapia), iii. 160.
macrodon (Myomyrus), i. 93.
„ (Synodontis), ii. 469.
macrognathus (Otolithus), iii. 119.
„ (Pseudotolithus), iii. 119.
macrolepidotus (Alestes), i. **217**, 218, 222; iv. 184.
„ (Brycinus), i. 217.
„ (Gnathonemus), i. **112**; iv. 167.
„ (Mormyrops), i. 112.
„ (Mormyrus), i. 112.
„ (Mugil), iv. 98.
macrolepis (Barbus), ii. 99.
„ (Citharinus), i. 294.
„ (Diagramma), iii. 129.
„ (Distichodus), i. 268.
„ (Mugil), iv. 94.
macromystax (Clarias), ii. 256.
macronema (Barbus), ii. 24.
„ (Heterobranchus), ii. 276.
macronemus (Polynemus), iv. 100.
macrophthalma (Anguilla), iii. 7.
„ (Muræna), iii. 7.
„ (Tilapia), iii. 261.
macrophthalmum (Pristipoma), iii. 130.
macrophthalmus (Alestes), i. **197**; iv. 176.
„ (Megalops), i. 28.
„ (Mormyrus), i. 130.
macropristis (Barbus), ii. 115.
macrops (Barbus), iv. 265.
„ (Chrysichthys), ii. 322, 324, 325.
„ (Marcusenius), i. 84.
„ (Myomyrus), iv. 162.
„ (Paratilapia), iii. 421.
„ (Pelmatochromis), iii. 421.
„ (Tilapia), iii. 238.
Macropteronotus, ii. 221.
„ anguillaris, ii. 226.
„ charmuth, ii. 226, 235.
macropterus (Megalops), i. 28.
macrorhynchus (Gobius), iv. 29.
macrostigma (Haplochilus), iii. 73.
„ (Salar), i. 166.
„ (Salmo), i. 166.
„ (Synodontis), ii. **432**; iv. 318.
macrostoma (Auchenoglanis), ii. 365.
„ (Barilius), iv. 279.
„ (Labeo), i. 325.
macrostoma (Parauchenoglanis), ii. **365**; iv. 310.
macroterolepis (Eugnathichthys), i. 243.
macrurus (Barbus), iv. 263.
„ (Haplochilus), iii. **67**; iv. 325.
maculata (Ctenopoma), iv. 65.
„ (Eleotris), iv. 18.
„ (Hydrargyra), iii. 33.
maculatus (Anabas), iv. 58, **65**.
„ (Distichodus), i. **264**; iv. 193.
„ (Liauchenoglanis), iv. 314.
„ (Synodontis), ii. 462.
maculipinna (Paratilapia), iii. 341.
maculosus (Leiosynodontis), ii. 404.
„ (Synodontis), ii. 404.
madagascariensis (Arius), ii. 388.
„ (Bedotia), iv. 77.
„ (Eleotris), iv. 15, **16**.
„ (Gobius), iv. 29.
„ (Ptychochromis), iii. 258.
„ (Tilapia), iii. 258.
maderensis (Gobius), iv. 35.
„ (Mugil), iv. 87.
magdalenæ (Barbus), ii. 179.
maindroni (Gobius), iv. 27.
major (Petersius), i. 237.
makiensis (Discognathus), i. 348.
malacanthus (Barbus), iv. 247.
Malacopterygii, i. 23.
Malapterurus, ii. 511.
„ affinis, ii. 512.
„ beninensis, ii. 512.
„ electricus, ii. 512.
„ ogoensis, ii. 512.
malo (Dules), iii. 96.
„ (Kuhlia), iii. 96.
Malopterurinæ, ii. 221.
Malopterurus, ii. 511.
„ electricus, ii. **512**; iv. 324.
mandibularis (Eutropius), ii. 290.
manyaræ (Tilapia), iii. 187.
marchei (Mormyrus), i. 64.
„ (Petrocephalus), i. 64.
marchii (Marcusenius), i. 64.
„ (Mastacembelus), iv. **116**, 119.
„ (Micracanthus), iv. 47.
Marcusenius, i. 60.
„ adspersus, i. 70.
„ anguilloides, i. 34.
„ ansorgii, i. **73**; iv. 161.

Marcusenius batesii, i. 72.
„ brachistius, i. 65, **67**; iv. 158.
„ brevis, iv. 160.
„ budgetti, i. 83.
„ cabræ, i. 65.
„ castelnaui, iv. 159.
„ castor, i. 77.
„ discorhynchus, i. **81**; iv. 162.
„ gaillardi, iv. 161.
„ harringtoni, i. 78.
„ hutereaui, iv. 160.
„ isidori, i. **75**; iv. 161.
„ kingsleyæ, i. **65**; iv. 158.
„ lhuysii, i. 70.
„ longianalis, i. **69**; iv. 159.
„ macrops, i. 84.
„ marchii, i. 64.
„ nigricans, i. **75**; iv. 161.
„ nigripinnis, i. 64.
„ pauciradiatus, i. **74**; iv. 161.
„ petherici, i. **82**; iv. 162.
„ plagiostoma, i. 80.
„ psittacus, i. 85.
„ pulverulentus, i. 63.
„ sphecodes, i. 66.
„ tanganicanus, i. 81.
„ tumifrons, i. 79.
„ weeksii, i. 71.
„ wilverthi, i. 86.
marequensis (Barbus), ii. 34, **36**.
margaritacea (Eleotris), iv. 15.
„ (Tilapia), iv. 329.
margaritæ (Barbus), ii. 39.
marginatum (Trematocara), iii. 455.
marginatus (Dules), iii. 93, 96.
„ (Lamprologus), iii. 463.
„ (Plotosus), ii. 278.
mariæ (Lates), iii. 108.
„ (Mormyrops), i. 44.
„ (Mormyrus), i. 44.
„ (Tilapia), iii. 186.
marmoratus (Mastacembelus), iv. 132, **133**.
„ (Schilbe), iv. 294.
„ (Synodontis), ii. 425.
marni (Haplochilus), iii. 70.
marnoi (Distichodus), i. 291.
maroccana (Pterocapoëta), i. 357.
maroccanus (Varicorhinus), i. 357.
martini (Distichodus), i. 275.
„ (Tilapia), iii. 239.
„ (Trachinotus), iv. 2.
Mastacembelidæ, iv. 112.
Mastacembelus, iv. 112.
„ ansorgii, iv. 122.
„ batesii, iv. 126.
„ brachyrhinus, iv. 136.
„ brevicauda, iv. 133.
„ congicus, iv. 123.
„ cryptacanthus, iv. **117**, 120, 125, 134.
„ cunningtoni, iv. 119.
„ ellipsifer, iv. 132.
„ flavomarginatus, iv. 125.
„ frenatus, iv. 116.
„ goro, iv. 121.
„ greshoffi, iv. 140.
„ liberiensis, iv. 119.
„ loennbergii, iv. 120.
„ longicauda, iv. 139.
„ marchii, iv. **116**, 119.
„ marmoratus, iv. 132, **133**.
„ mellandi, iv. 135.
„ moeruensis, iv. 130.
„ moorii, iv. 127.
„ niger, iv. 125.
„ nigromarginatus, iv. 129.
„ ophidium, iv. 141.
„ paucispinis, iv. **115**.
„ reticulatus, iv. 134.
„ sclateri, iv. 118.
„ shiranus, iv. **128**, 131.
„ signatus, iv. 124.
„ stappersii, iv. 137.
„ tæniatus, iv. 138.
„ tanganicæ, iv. 138.
„ trispinosus, iv. 137.
„ ubangensis, iv. 132.
„ victoriæ, iv. 181.
masuianus (Mormyrops), i. 38.
materfamilias (Hemitilapia), iii. 492.
mathoiæ (Barbus), ii. **66**.
mato (Dules), iii. 96.
mattozi (Barbus), ii. **118**; iv. 251.
mauritiana (Anguilla), iii. 7.
mauritianus (Eleotris), iv. 21.
maurus (Bagrus), ii. 321.
mawambi (Barbus), iv. 246.
mawambiensis (Barbus), iv. 231.

maxillosus (Trachinotus), iv. 2, 3.
mbu (Tetrodon), iv. 145.
meeki (Tilapia), iii. 194.
Megalops, i. 27.
„ curtifilis, i. 28.
„ cyprinoides, i. 28.
„ filamentosus, i. 28.
„ indicus, i. 28.
„ kundinga, i. 28.
„ macrophthalmus, i. 28.
„ macropterus, i. 28.
„ oligolepis, i. 28.
„ setipinnis, i. 28.
melanio (Gobius), iv. 35.
melanochir (Mugil), iv. 98.
Melanodactylus, ii. 314.
„ nigrodigitatus, ii. 322.
melanogaster (Synodontis), ii. 473.
Melanogenes macrocephalus, iii. 176.
„ microcephalus, iii. 171, 173.
melanogenys (Ectodus), iii. 448.
„ (Enantiopus), iii. 448.
melanopleura (Chromis), iii. 190.
„ (Tilapia), iii. **190**; iv. 329.
melanopterus (Butis), iv. 11.
„ (Eleotris), iv. 11.
„ (Gobius), iv. 36.
„ (Synodontis), ii. 431.
melanospilus (Fundulus), iii. 34.
melanostictus (Synodontis), ii. **418**; iv. 316.
melanostigma (Pelmatochromis), iii. 421.
melanotheron (Sarotherodon), iii. 176.
melas (Clariallabes), ii. **268**; iv. 289.
„ (Clarias), ii. 268.
mellandi (Clarias), ii. **238**; iv. 283.
„ (Mastacembelus), iv. 135.
„ (Paratilapia), iii. 358.
membranaceus (Hemisynodontis), ii. 474.
„ (Pimelodus), ii. 474.
„ (Synodontis), ii. 472, **474**; iv. 323.
meneliki (Barbus), ii. 67.
mentalis (Barbus), iv. 227.
„ (Eutropius), ii. **288**; iv. 290.
mento (Barbus), ii. 41.
„ (Chanos), i. 164.
„ (Doryichthys), iii. 82.
„ (Gnathonemus), i. **106**; iv. 164.
„ (Mormyrus), i. 106.
menzalensis (Chromis), iii. 197.
menzalensis (Tilapia), iii. 197.
meridionalis (Bagrus), ii. 312.
meruensis (Barbus), ii. 115.
Mesoborus, i. 245; iv. 188.
„ crocodilus, i. **245**; iv. 188.
mesops (Labeo), i. **313**, 331.
mexicanus (Mugil), iv. 80.
mfongosi (Barbus), iv. 228.
Micracanthus, iv. 47.
„ marchii, iv. 47.
Micralestes, i. 223.
„ acutidens, i. **224**; iv. 184.
„ altus, i. **230**; iv. 184.
„ holargyreus, i. **227**; iv. 184.
„ humilis, i. **226**; iv. 184.
„ interruptus, i. 229.
„ stormsi, i. 225.
„ urotænia, i. 228.
microcephala (Tilapia), iii. 174.
microcephalus (Barilius), ii. 205.
„ (Chromis), iii. 173.
„ (Melanogenes), iii. 171 173.
„ (Mormyrus), i. 67.
„ (Pelotrophus), ii. 205.
microdon (Pelmatochromis), iii. 412.
microlepidotum (Ctenopoma), iv. 52.
microlepidotus (Ichthyoborus), i. 251.
microlepis (Barilius), ii. 208.
„ (Boulengerochromis), iii. 370.
„ (Fundulus), iii. 39.
„ (Haplotaxodon), iii. 444.
„ (Lates), iii. 108.
„ (Paratilapia), iii. 370.
„ (Pelotrophus), ii. 208.
„ (Perissodus), iii. 497.
„ (Sarcodaces), i. 177.
„ (Tilapia), iii. 370.
Micromugil, iii. 18.
micronema (Barbus), ii. 79.
Microphis, iii. 83.
microphthalmus (Clarias), ii. 232, 253.
„ (Petrocephalus), iv. 155.
microps (Gobius), iv. 26.
„ (Stomatorhinus), i. **92**; iv. 162.
microstoma (Bryconæthiops), i. **188**; iv. 176.
„ (Mormyrops), i. 44.
microstomus (Chromis), iii. 169.
Microsynodontis, ii. 476.
„ batesii, ii. 476.

microterolepis (Barbus), ii. 23.
Microthrissa, i. 161.
„ royauxi, i. 161.
mimus (Barbus), iv. 269.
minchini (Barbus), ii. **126**; iv. 255.
minor (Bathybates), iii. 442.
minuta (Neobola), ii. 213.
minutus (Engraulicypris), ii. 213.
„ (Trachyglanis), ii. 507.
miodon (Pellonula), i. 157.
miolepis (Barbus), ii. 131, **141**, 168.
mirabilis (Barbus), iv. 236.
mirus (Gnathonemus), i. **119**; iv. 167.
mitior (Barbus), ii. 105.
miurus (Tetrodon), iv. 147.
möbiusii (Eutropius), ii. 293.
Mochocus, ii. 492.
„ brevis, ii. 495.
„ niloticus, ii. 493.
mochon (Atherina), iv. 74.
mocquardianus (Brachyalestes), i. 188.
mocquardii (Lamprologus), iii. 466.
modesta (Paratilapia), iii. 326.
„ (Pellonula), i. 156.
modestus (Hemichromis), iii. 326.
„ (Lamprologus), iii. 469.
„ (Leptocypris), ii. 190.
„ (Petersius), i. 232.
modjensis (Chiloglanis), ii. 480.
moebii (Eutropius), ii. 293.
moeruensis (Haplochilus), iii. 66.
„ (Haplochromis), iii. 307.
„ (Mastacembelus), iv. 130.
„ (Paratilapia), iii. 307.
moffati (Chromys), iii. 300.
„ (Haplochromis), iii. 300.
Mohanga, iii. 80.
„ tanganicana, iii. 80.
mohasicus (Barbus), iv. 253.
mondabu (Lamprologus), iii. 470.
mongallensis (Slatinia), ii. 510.
monkei (Auchenoglanis), iv. 311.
„ (Clarias), iv. 284.
monochrous (Alticus), iv. 111.
„ (Salarias), iv. 111.
Monodactylus, iii. 119.
„ argenteus, iii. 122.
„ falciformis, iii. 120.
„ rhombeus, iii. 122.
montanus (Labeo), i. 331.
„ (Tylognathus), i. 331.
monteiri (Eleotris), iv. 20.
„ (Gnathonemus), i. **105**; iv. 164.
„ (Mormyrus), i. 105.
„ (Tilapia), iii. 215.
moorii (Barilius), ii. **206**; iv. 280.
„ (Clarias), ii. 230.
„ (Cyrtocara), iii. 445.
„ (Gephyrochromis), iii. 458.
„ (Gnathonemus), i. **96**; iv. 163.
„ (Lamprologus), iii. 478.
„ (Mastacembelus), iv. 127.
„ (Mormyrus), i. 96.
„ (Tropheus), iii. 276.
Mormyridæ, i. 29.
Mormyrinæ, i. 29.
Mormyrodes, i. 126.
Mormyrops, i. **30**, 59, 94.
„ anguilloides, i. 34.
„ attenuatus, i. 45.
„ batesianus, iv. 153.
„ boulengeri, i. **40**; iv. 154.
„ breviceps, i. **36**; iv. 153.
„ citernii, iv. 153.
„ curtus, i. 41.
„ deliciosus, i. **32**; iv. 152.
„ engystoma, i. **36**; iv. 153.
„ furcidens, i. 46.
„ henryi, i. 59.
„ lineolatus, i. 42.
„ longiceps, i. 35.
„ mariæ, i. 44.
„ masuianus, i. 38.
„ microstoma, i. 44.
„ nigricans, i. 43.
„ parvus, i. 37.
„ sirenoides, i. 39.
„ tuckeyi, i. 32.
„ vaillanti, i. 43.
„ zambanenje, i. 32.
„ zanclirostris, i. **40**; iv. 154.
Mormyrus, i. 30, 47, 60, 94, **126**.
„ adspersus, i. 70.
„ affinis, i. 88.
„ agnus, i. 128.
„ amblystoma, i. 52.
„ anchietæ, i. **129**; iv. 167.
„ anguilloides, i. 34.
„ bachiqua, i. 134.
„ bane, i. 48.
„ bebe, i. 142.
„ bovei, i. 54.

Mormyrus bozasi, i. 138.
„ brachyistius, i. 67.
„ bumbanus, iv. 168.
„ caballus, i. 132.
„ caschive, i. 128, **136**
„ catostoma, i. 52, 57.
„ cobitiformis, i. 59.
„ curvifrons, i. 132.
„ cyprinoides, i. 48, 49.
„ deliciosus, i. 32.
„ dendera, i. 34.
„ dequesne, i. 48.
„ discorhynchus, i. 81, 82.
„ dorsalis, i. 142.
„ ehrenbergii, i. 48.
„ ellenbergeri, iv. 167.
„ geoffroyi, i. 136, 137.
„ gliroides, i. 58.
„ grandisquamis, i. 96.
„ greshoffi, i. 117.
„ guentheri, i. 128.
„ habereri, iv. 168.
„ hasselquistii, i. **128**; iv. 167.
„ henryi, i. 59.
„ herse, i. 128.
„ hildebrandti, i. 136.
„ isidori, i. 75.
„ jæ, iv. 168.
„ joannis, i. 48.
„ jubelini, i. **140**; iv. 169.
„ kannume, i. **134**; iv. 169.
„ kingsleyæ, i. 65.
„ lacerda, i. 128.
„ lepturus, i. 96.
„ lhuysii, i. 70.
„ liberiensis, i. 67.
„ longiceps, i. 35.
„ longipinnis, i. 136.
„ longirostris, i. 136, **139**, 140; iv. 169.
„ macrophthalmus, i. 130.
„ marchei, i. 64.
„ mariæ, i. 44.
„ microcephalus, i. 67.
„ moorii, i. 96.
„ mucupe, i. 139.
„ nacra, i. 136.
„ niloticus, i. 137.
„ ovis, i. 131.
„ oxyrhynchus, i. 134, 140.
„ pauciradiatus, i. 74.
Mormyrus proboscirostris, i. 141.
„ psittacus, i. 85.
„ rume, i. **140**; iv. 169.
„ sauvagii, i. 49.
„ simus, i. 53.
„ sphecodes, i. 66.
„ swanenburgi, i. 32.
„ tamandua, i. 118.
„ tapirus, i. 133.
„ tenuicauda, i. 53.
„ tenuirostris, i. 134.
„ tuckeyi, i. 32.
„ ussheri, i. 116.
„ walkeri, i. 88.
„ zambanenje, i. 32.
„ zanclirostris, i. 40.
Morone, iii. 101.
„ labrax, iii. 102.
„ punctata, iii. 103.
Moronopsis, iii. 92.
„ argenteus, iii. 95, 96.
„ fuscus, iii. 93.
„ rupestris, iii. 93.
„ sandvicensis, iii. 96.
„ tæniurus, iii. 95.
mossambica (Anguilla), iii. 6.
„ (Muræna), iii. 6.
„ (Tilapia), iii. **154**; iv. 327.
mossambicus (Chanos), i. 164.
„ (Chromis), iii. 154, 157, 197.
„ (Clarias), ii. 228, **232**; iv. 281.
„ (Distichodus), i. **268**; iv. 193.
motebensis (Barbus), ii. 147.
mucupe (Mormyrus), i. 139.
Mugil, iv. 78.
„ albula, iv. 80.
„ ashanteensis, iv. 80.
„ auratus, iv. 84, 86.
„ axillaris, iv. 91.
„ berlandieri, iv. 80.
„ borbonicus, iv. 82.
„ britannicus, iv. 84.
„ cæruleo-maculatus, iv. 91
„ camptosiensis, iv. 80.
„ capensis, iv. 84, 85.
„ capito, iv. 83.
„ cephalotus, iv. 82.
„ cephalus, iv. 80, 83, 90.
„ ceylonensis, iv. 93.

Mugil chanos, i. 164.
„ chelo, iv. 87, 89.
„ constanciæ, iv. 80.
„ corrugatus, iv. 90.
„ crenilepis, iv. 94.
„ cryptochilus, iv. 86.
„ curtus, iv. 84.
„ diadema, iv. 94.
„ dubahra, iv. 84.
„ euronotus, iv. 86.
„ falcipinnis, iv. 88.
„ grandisquamis, iv. 96.
„ guentheri, iv. 80.
„ hoefleri, iv. 96.
„ hypselopterus, iv. 96.
„ labrosus, iv. 90.
„ lineatus, iv. 80.
„ macrolepidotus, iv. 98.
„ macrolepis, iv. 94.
„ maderensis, iv. 87.
„ melanochir, iv. 98.
„ mexicanus, iv. 80.
„ multilineatus, iv. 84.
„ natalensis, iv. 87.
„ octoradiatus, iv. 84, 87.
„ oeur, iv. 82.
„ petherici, iv. 84.
„ plumieri, iv. 80.
„ radians, iv. 93.
„ ramada, iv. 84.
„ rammelsbergii, iv. 80.
„ richardsonii, iv. 86.
„ robustus, iv. 92.
„ rodericensis, iv. 94.
„ saliens, iv. 85.
„ salmoneus, i. 164.
„ schlegelii, iv. 96.
„ seheli, iv. 91.
„ septentrionalis, iv. 90.
„ smithii, iv. 84, 94.
„ tang, iv. 80.
„ troschelii, iv. 94.
„ vaigiensis, iv. 97.
Mugilidæ, iv. 78.
Mugilomorus anna-carolina, i. 25.
multicolor (Chromis), iii. 299.
„ (Paratilapia), iii. 299.
multidens (Paratilapia), iii. 407.
„ (Pelmatochromis), iii. 407.
multifasciata (Ctenopoma), iv. 65.
„ (Tilapia), iii. 175.
multifasciatus (Chromis), iii. 175.
„ (Haplochilus), iii. 75.
„ (Lamprologus), iii. 468.
multilineatus (Eutropius), iv. 292.
„ (Mugil), iv. 84.
multimaculatus (Barbus), ii. 148.
„ (Synodontis), ii. 419.
multiocellatus (Pelmatochromis), iii. 409.
multipunctatus (Synodontis), ii. 420.
multispine (Ctenopoma), iv. 53.
multispinis (Anabas), iv. 53.
„ (Ctenopoma), iv. 53.
Muræna anguilla, iii. 4.
„ bengalensis, iii. 7.
„ labiata, iii. 7.
„ macrocephala, iii. 9.
„ macrophthalma, iii. 7.
„ mossambica, iii. 6.
„ virescens, iii. 9.
muriei (Anabas), iv. 64.
musumbi (Barbus), iv. 271.
myaposæ (Haplochilus), iii. 44.
Myletes, i. 190.
„ baremose, i. 195.
„ dentex, i. 193.
„ guile, i. 205.
„ hasselquistii, i. 193.
„ nurse, i. 205.
Myomyrus, i. 92.
„ macrodon, i. 93.
„ macrops, iv. 162.
myrias (Trachinotus), iv. 3.
myriodon (Chrysichthys), ii. 339.
mystus (Schilbe), ii. 293.
„ (Silurus), ii. 293.
Myxus, iv. 78.
„ cœcutiens, iv. 82.
„ curvidens, iv. 87.
„ superficialis, iv. 82.
„ trimaculatus, iv. 91.

nacra (Mormyrus), i. 136.
nairobiensis (Barbus), ii. 132; iv. 257.
nana (Eleotris), iv. 12.
Nandidæ, iii. 99.
Nannæthiops, i. 254.
„ tritæniatus, iv. 190.
„ unitæniatus, i. 254; iv. 190.
Nannocharax, i. 279.
„ ansorgii, iv. 195.

Nannocharax brevis, i. 280.
„ dimidiatus, i. 286.
„ elongatus, i. 284.
„ fasciatus, i. **281**; iv. 195.
„ intermedius, i. **282**; iv. 195.
„ niloticus, i. 283.
„ ocellicauda, i. 285.
„ ogoensis, iv. 196.
„ parvus, i. **281**; iv. 195.
„ tænia, i. **286**; iv. 195.
Nannochromis, iii. 375.
„ dimidiatus, iii. 376.
„ nudiceps, iii. 375.
„ squamiceps, iii. 376.
nanum (Ctenopoma), iv. 58.
nanus (Anabas), iv. 58.
„ (Aphanius), iii. 18.
nasus (Barbus), ii. 113.
„ (Labeo), i. 333.
nasutus (Barbus), iv. 247.
„ (Varicorhinus), iv. 247.
natalensis (Alestes), i. 204.
„ (Barbus), ii. 23.
„ (Chromis), iii. 157.
„ (Mugil), iv. 87.
„ (Tilapia), iii. **157**; iv. 327.
neavii (Barilius), ii. 199.
nebulosus (Synodontis), ii. 423.
nedgia (Barbus), ii. 33, **51**.
„ (Labeobarbus), ii. 51.
neelspruitensis (Varicorhinus), iv. 221.
nefasch (Characinus), i. 273, 275.
„ (Distichodus), i. 274, 275.
neglectus (Barbus), ii. 173.
Nemachilus, ii. 216.
„ abyssinicus, ii. 217.
Nematogobius, iv. 40.
„ ansorgii, iv. 40.
Neobola, ii. 209.
„ argentea, ii. 212.
„ bottegi, ii. 213.
„ brevianalis, ii. 211.
„ minuta, ii. 213.
Neoborus, i. 249.
„ ornatus, i. **250**; iv. 189.
„ quadrilineatus, i. **251**; iv. 189.
Neolebias, i. 256.
„ ansorgii, iv. 191.
„ spilotænia, iv. 192.
„ trilineatus, i. 257.
„ unifasciatus, i. 256.
Nestis, iv. 99.
„ cyprinoides, iv. 99.
„ dobuloides, iv. 99.
neumanni (Chiloglanis), ii. 481.
„ (Clarias), ii. 246.
„ (Fundulus), iii. 35.
„ (Labeo), i. 320.
neumayeri (Barbus), ii. 132.
neuvillii (Barbus), ii. 45.
ngamensis (Auchenoglanis), ii. 371.
„ (Chromys), iii. 328.
„ (Clarias), ii. 235; iv. **282**.
ngomensis (Tilapia), iii. 178.
niger (Culius), iv. 21.
„ (Gnathonemus), i. 101.
„ (Gobius), iv. 35.
„ (Mastacembelus), iv. 125.
„ (Mormyrus), i. 101.
„ (Oreochromis), iii. 152.
nigeriensis (Barbus), ii. **154**; iv. 264.
nigra (Eleotris), iv. 21.
„ (Tilapia), iii. 152.
nigrescens (Astatotilapia), iii. 296.
„ (Haplochromis), iii. 296.
nigri (Gobius), iv. 34.
„ (Notopterus), i. 147.
„ (Xenomystus), i. 147.
nigricans (Haplochilus), iii. 74.
„ (Labeo), iv. 210.
„ (Marcusenius), i. **75**; iv. 161.
„ (Mormyrops), i. 43.
„ (Tilapia), iii. 241.
nigricaudatus (Amphilius), ii. 361.
nigrifrons (Trematocara), iii. 456.
nigripinnis (Chromis), iii. 173.
„ (Gobius), iv. 36.
„ (Marcusenius), i. 63.
„ (Paratilapia), iii. 373.
„ (Tilapia), iii. 173.
nigrita (Bagrus), ii. 342.
„ (Chrysichthys), ii. 342.
„ (Corvina), iii. 116.
„ (Hemisynodontis), ii. 429.
„ (Octonematichthys), ii. 342.
„ (Synodontis), ii. **429**; iv. 316.
nigrodigitatus (Chrysichthys), ii. **321**; iv. 301.
„ (Melanodactylus), ii. 322.
„ (Pimelodus), ii. 321.
nigrofasciata (Paratilapia), iii. 393.
nigrofasciatus (Pelmatochromis), iii. 393.

nigrolinea (Barbus), ii. 131.
nigromaculatus (Synodontis), ii. 416.
nigromarginatus (Mastacembelus), iv. 129.
nigropannosum (Ctenopoma), iv. 55.
nigropannosus (Anabas), iv. 55.
nili (Notopterus), i. 147.
„ (Xenomystus), i. 147.
nilotica (Anguilla), iii. 5.
„ (Chromis), iii. 162.
„ (Clupea), i. 154.
„ (Cromeria), i. **173**; iv. 175.
„ (Perca), iii. 105.
„ (Tilapia), iii. **162**; iv. 327.
niloticus (Alburnus), ii. 193.
„ (Barilius), ii. 193.
„ (Centriscus), i. 137.
„ (Centropomus), iii. 105.
„ (Characinus), i. 192.
„ (Chiloglanis), ii. 483.
„ (Chromis), iii. 154, 157, 162, 167, 169, 173, 190, 197, 206.
„ (Coregonus), i. 283.
„ (Cyprinus), i. 304, 329.
„ (Distichodus), i. 273.
„ (Eutropius), ii. **283**; iv. 290.
„ (Gymnarchus), i. **144**; iv. 170.
„ (Heterotis), i. **149**; iv. 171.
„ (Hypophthalmus), ii. 283.
„ (Labeo), i. **304**, 306, 317.
„ (Lates), iii. 105.
„ (Leuciscus), ii. 193.
„ (Mochocus), ii. 493.
„ (Mormyrus), i. 137.
„ (Nannocharax), i. 283.
„ (Salmo), i. 273, 275.
„ (Sudis), i. 149.
nisorius (Fundulus), iii. 39.
noboli (Distichodus), i. 262.
notatus (Synodontis), ii. 462.
Nothobranchius, iii. 23.
„ orthonotus, iii. 33, 35.
„ tæniopygus, iii. 37.
Notoglanidium, ii. 377.
„ walkeri, ii. 377.
Notopteridæ, i. 145.
Notopterus, i. 146.
„ afer, i. **146**; iv. 170.
notospilus (Distichodus), i. **262**; iv. 193.
nototænia (Paratilapia), iii. 359.
„ (Procatopus), iii. 79.
nubila (Tilapia), iii. 235.
nuchalis (Chanos), i. 164.
nuchimaculatus (Haplochilus), iii. 50.
nuchisquamulata (Tilapia), iii. 290.
nuchisquamulatus (Chromis), iii. 290.
„ (Ctenochromis), iii. 290.
„ (Haplochromis), iii. 290.
nudiceps (Gobius), iv. 28.
„ (Nannochromis), iii. 375.
„ (Pseudoplesiops), iii. 375.
numenius (Gnathonemus), i. 124.
nummifer (Barbus), ii. **105**; iv. 250.
„ (Synodontis), ii. **463**; iv. 322.
nurse (Alestes), i. **205**; iv. 179.
„ (Brachyalestes), i. 206.
„ (Brycinus), i. 206.
„ (Myletes), i. 205.
nyassæ (Barbus), ii. **77**; iv. 236.
„ (Petrochromis), iii. 272.
„ (Synodontis), ii. 462.
nyirica (Tilapia), iii. 162.

obesus (Pelmatochromis), iii. 414.
„ (Synodontis), ii. **433**; iv. 318.
obliquidens (Chromis), iii. 290.
„ (Ctenochromis), iii. 290.
„ (Tilapia), iii. 290.
obscurus (Labeo), i. **338**; iv. 207.
„ (Ophiocephalus), iv. 69, **70**.
obtusirostris (Eutropius), ii. 283.
„ (Pellonula), i. 158.
occidentalis (Auchenoglanis), ii. 369.
„ (Barbus), ii. 32.
„ (Gobius), iv. 39.
„ (Hyperopisus), i. 142.
„ (Petersius), i. 240.
„ (Physailia), iv. 296.
„ (Pimelodus), ii. 369.
ocellaris (Awaous), iv. 36.
„ (Gobius), iv. 36.
ocellatum (Ctenopoma), iv. 67.
ocellatus (Anabas), iv. 67.
„ (Julidochromis), iii. 462.
ocellicauda (Nannocharax), i. 285.
ocellifer (Pelmatochromis), iii. 391.
„ (Synodontis), ii. **409**; iv. 316.
ochrogenys (Enantiopus), iii. 449.
Octonematichthys, ii. 341.
„ nigrita, ii. 342.
octoradiatus (Mugil), iv. 84, 87.
Odaxothrissa, i. 160.

Odaxothrissa ansorgii, iv. 172.
„ losera, i. 160.
odoë (Salmo), i. 177.
„ (Sarcodaces), i. **177**; iv. 175.
„ (Xiphorhamphus), i. 177.
„ (Xiphorhynchus), i. 177.
oeur (Mugil), iv. 82.
ogoensis (Gephyroglanis), ii. 346.
„ (Malapterurus), ii. 512.
„ (Nannocharax), iv. 196.
ogowensis (Chromis), iii. 190.
„ (Chrysichthys), ii. 322.
ogunensis (Labeo), iv. 207.
olfax (Osphromenus), iv. 47.
oligacanthus (Ptychochromis), iii. 258, 259.
„ (Tilapia), iii. 258.
oligolepis (Megalops), i. 28.
oliphanti (Barbus), iv. 214.
omalonota (Pœcilia), iii. 50.
omias (Synodontis), ii. 400, **401**.
Oncorhynchus, i. 166.
Onychostoma, i. 352.
Ophichthys, iii. 10.
„ buettikoferi, iii. 10.
ophidium (Mastacembelus), iv. 141.
Ophiocara, iv. 7.
„ ophiocephalus, iv. 15.
„ porocephalus, iv. 15.
Ophiocephalidæ, iv. 69.
Ophiocephalus, iv. 69.
„ africanus, iv. 69.
„ insignis, iv. 72.
„ obscurus, iv. 69, **70**.
ophiocephalus (Eleotris), iv. 15.
„ (Ophiocara), iv. 15.
Ophisternon, iii. 1.
Ophthalmotilapia, iii. 138.
„ boops, iii. 265.
„ foæ, iii. 266.
Opisthomi, iv. 112.
opisthotænia (Alestes), i. **215**; iv. 182.
Opsaridion zambezense, ii. 198.
Opsaridium, ii. 191.
„ buchholzi, ii. 201.
Opsarius thebensis, ii. 193.
orbicularis (Psettus), iii. 120.
oreas (Barbus), ii. **38**; iv. 229.
Oreochromis, iii. 138.
„ hunteri, iii. 149.
„ niger, iii. 152.
Oreochromis shiranus, iii. 151.
orientalis (Bagrus), ii. 307.
„ (Dicentrarchus), iii. 104.
„ (Labrax), iii. 104.
ornatipinnis (Polypterus), i. 12.
„ (Synodontis), ii. 444.
„ (Xenotilapia), iii. 453.
ornatus (Chrysichthys), ii. **337**; iv. 303.
„ (Julidochromis), iii. 484.
„ (Neoborus), i. 250.
„ (Synodontis), iv. 316.
orontis (Clarias), ii. 235.
orthonotus (Cyprinodon), iii. 33.
„ (Fundulus), iii. **33**, 34, 35.
„ (Nothobranchius), iii. 33, 35.
Osphromenidæ, iv. 46.
Osphromenus olfax, iv. 47.
Ostariophysi, i. 174.
Osteoglossidæ, i. 148.
Otolithus, iii. 117.
„ macrognathus, iii. 119.
„ senegalensis, iii. 118.
Otoperca, iii. 130.
„ aurita, iii. 130.
ovalis (Chromis), iii. 208.
„ (Tilapia), iii. 208.
ovatus (Gasterosteus), iv. 2.
„ (Trachynotus), iv. 2.
ovis (Mormyrus), i. 131.
oxycephalus (Clarias), iv. 284.
Oxyglanis, ii. 366.
„ sacchii, ii. 369.
Oxymormyrus, i. 30.
Oxyrhynchus deliciosus, i. 32.
oxyrhynchus (Amphilius), iv. 306.
„ (Anabas), iv. 65, **66**.
„ (Barbus), ii. 76.
„ (Hemitilapia), iii. 489.
„ (Mormyrus), i. 134, 140.
„ (Tilapia), iii. 489.
Oxyurichthys, iv. 22.

pachynema (Clarias), ii. **259**; iv. 287.
pacifica (Cobitis), iv. 21.
paganellus (Gobius), iv. 35.
pagenstecheri (Barbus), ii. 72.
Pagrus, iii. 132.
pallida (Tilapia), iii. 231.
pallidus (Barbus), ii. 149.
palmas (Polypterus), i. **16**; iv. 150.

paludinosus (Barbus), ii. **115**; iv. 251.
Pantodon, i. 151.
„ buchholzi, i. **151**; iv. 171.
Pantodontidæ, i. 151.
pappenheimi (Barbus), ii. 107.
„ (Marcusenius), iv. 158.
„ (Tilapia), iii. 232.
Paracara, iii. 308.
„ typus, iii. 315.
paradoxus (Plecodus), iii. 503.
Paradules rupestris, iii. 93.
„ tæniurus, iii. 95.
Parailia, ii. 302.
„ congica, ii. 302.
„ longifilis, ii. **303**; iv. 297.
Paramphilius, ii. 363.
„ trichomycteroides, ii. 363.
Paraphago, i. 244.
„ rostratus, i. 244.
Paraphractura, ii. 506.
„ tenuicauda, ii. 506.
Paratilapia, iii. 284, **308**, 433.
„ afra, iii. 325.
„ angusticeps, iii. 320.
„ aurita, iii. 415.
„ bayoni, iii. 337.
„ bicolor, iii. 346.
„ bleekeri, iii. 315.
„ bloyeti, iii. 302.
„ buettikoferi, iii. 390.
„ cærulea, iii. 433.
„ calliura, iii. 374.
„ carlottæ, iii. 353.
„ cavifrons, iii. 419.
„ cerasogaster, iii. 316.
„ chilotes, iii. 338.
„ chrysonota, iii. 362.
„ cinerea, iii. 344.
„ codringtoni, iii. 352.
„ compressiceps, iii. 331.
„ corbali, iii. 351.
„ crassilabris, iii. 345.
„ demeusii, iii. 324.
„ dewindti, iii. 367.
„ dimidiata, iii. 360.
„ dorsalis, iii. 350.
„ esox, iii. 435.
„ frederici, iii. 355.
„ frontosa, iii. 420.
„ furcifera, iii. 368.
„ gestri, iii. 318.
Paratilapia gibbiceps, iii. 354.
„ granti, iii. 342.
„ guiarti, iii. 336.
„ habereri, iii. 407.
„ intermedia, iii. 363.
„ jentinki, iii. 383.
„ kafuensis, iii. 320.
„ leptosoma, iii. 372.
„ livingstonii, iii. 286.
„ longiceps, iii. 434.
„ longimanus, iii. 319.
„ longirostris, iii. 332.
„ luebberti, iii. 350.
„ macrocephala, iii. 317.
„ macrops, iii. 421.
„ maculipinna, iii. 341.
„ mellandi, iii. 358.
„ microlepis, iii. 370.
„ modesta, iii. 326.
„ moeruensis, iii. 307.
„ multicolor, iii. 299.
„ multidens, iii. 407.
„ nigripinnis, iii. 373.
„ nigrofasciata, iii. 393.
„ nototænia, iii. 359.
„ parvidens, iii. 322.
„ pectoralis, iii. 339.
„ pfefferi, iii. 323.
„ polleni, iii. 315.
„ polyodon, iii. 349.
„ prognatha, iii. 333.
„ retrodens, iii. 347.
„ rhoadesii, iii. 361.
„ robusta, iii. 328.
„ schwebischi, iii. 365.
„ serranus, iii. 333, **334**.
„ smithii, iii. 357.
„ stenosoma, iii. 369.
„ thomasi, iv. 331.
„ thumbergii, iii. **328**; iv. 330.
„ toddi, iii. 327.
„ typus, iii. 315.
„ ventralis, iii. 365.
„ victoriana, iii. 341.
„ vittata, iii. 330.
„ wingatii, iii. 303.
Parauchenoglanis, ii. 364.
„ ansorgii, iv. 309.
„ guttatus, ii. 364.
„ macrostoma, ii. **365**; iv. 310.

pardalis (Synodontis), ii. 442; iv. 320.
Paretroplus, iii. 504.
„ damii, iii. 505, 506.
„ polyactis, iii. 506.
parkii (Arius), ii. 385, 387.
parvidens (Paratilapia), iii. 322.
parvimanus (Clarias), ii. 226.
parvipinne (Sicydium), iv. 45.
parvipinnis (Cotylopus), iv. 45.
„ (Sicydium), iv. 45.
parvulus (Labeo), iv. 205.
parvus (Labeo), i. 337.
„ (Mormyrops), i. 37.
„ (Nannocharax), i. 281; iv. 195.
paucior (Barbus), ii. 136.
pauciradiatus (Marcusenius), i. 74; iv. 161.
„ (Mormyrus), i. 74.
paucispinis (Mastacembelus), iv. 115.
paytoni (Barbus), ii. 82.
pectoralis (Ctenochromis), iii. 237.
„ (Eleotris), iv. 12.
„ (Paratilapia), iii. 339.
„ (Tilapia), iii. 237.
Pelecus bibie, ii. 215.
pellegrini (Anabas), iv. 54.
„ (Champsoborus), iv. 188.
„ (Mesoborus), iv. 188.
„ (Pelmatochromis), iii. 388.
Pellona, i. 162.
„ ditchoa, i. 163.
„ indica, i. 163.
Pellonula, i. 155.
„ acutirostris, i. 159.
„ leonensis, iv. 172.
„ miodon, i. 157.
„ modesta, i. 156.
„ obtusirostris, i. 158.
„ vorax, i. 156; iv. 171.
pellucida (Physailia), ii. 300; iv. 296.
Pelmatochromis, iii. 377.
„ angolensis, iii. 408.
„ annectens, iii. 405.
„ ansorgii, iii. 406.
„ arnoldi, iii. 404.
„ auritus, iii. 415.
„ batesii, iii. 393.
„ boulengeri, iii. 396.
„ buettikoferi, iii. 390, 391; iv. 333.
Pelmatochromis caudifasciatus, iii. 394; iv. 333.
„ cavifrons, iii. 419.
„ congicus, iii. 386.
„ darlingi, iii. 410.
„ dimidiatus, iii. 376.
„ flavipinnis, iii. 418.
„ frontosus, iii. 420.
„ genisquamulatus, iv. 330.
„ guentheri, iii. 385, 388.
„ humilis, iv. 333.
„ intermedius, iv. 332.
„ jentinki, iii. 383; iv. 332.
„ kingsleyæ, iii. 398.
„ kribensis, iii. 400.
„ lateralis, iii. 385.
„ lepidurus, iii. 385.
„ longirostris, iii. 395.
„ macrops, iii. 421.
„ melanostigma, iii. 421.
„ microdon, iii. 412.
„ multidens, iii. 407.
„ multiocellatus, iii. 409.
„ nigrofasciatus, iii. 393.
„ obesus, iii. 414.
„ ocellifer, iii. 391.
„ pellegrini, iii. 388.
„ pleurospilus, iii. 423.
„ polylepis, iii. 382.
„ polyodon, iii. 407.
„ pulcher, iii. 402; iv. 334.
„ regani, iii. 390.
„ rhodostigma, iii. 424.
„ riponianus, iii. 411.
„ spekii, iii. 416.
„ stappersii, iii. 423.
„ subocellatus, iii. 399.
„ tæniatus, iii. 401, 407.
„ welwitschii, iii. 397.
Pelotrophus, ii. 191.
„ microcephalus, ii. 205.
„ microlepis, ii. 208.
Peltura, ii. 498.
„ bovei, ii. 499.
„ scaphirhynchura, ii. 505.
Pentanemus, iv. 100.
„ quinquarius, iv. 100.
Perca argentea, iii. 95.
„ ciliata, iii. 93.
„ diacantha, iii. 102.

Perca elongata, iii. 102.
„ labrax, iii. 102.
„ latus, iii. 105.
„ nilotica, iii. 105.
„ punctata, iii. 102, 103.
„ punctulata, iii. 103.
„ sinuosa, iii. 102.
Percesoces, iii. 91.
Percichthys ciliata, iii. 93.
Perciformes, iii. 90.
percivali (Barbus), ii. **135**; iv. 257.
„ (Labeo), iv. 201.
„ (Tilapia), iii. 210.
percoides (Haplochromis), iii. 296.
perince (Barbus), ii. **170**; iv. 269.
peringueyi (Barilius), iv. 275.
Perissodus, iii. 497.
„ microlepis, iii. 497.
perplexicans (Barbus), ii. **71**; iv. 236.
„ (Capoëta), iv. 236.
perrieri (Tilapia), iii. 229.
perroteti (Pristis), i. **3**; iv. 149.
persimilis (Chrysichthys), ii. 324.
petersii (Distichodus), i. 265.
„ (Gnathonemus), i. **99**; iv. 164.
„ (Haplochilus), iii. 59, 71.
„ (Mormyrus), i. 99, 100.
Petersius, i. 231.
„ ansorgii, iv. 185.
„ brumpti, i. 235.
„ caudalis, i. 236.
„ conserialis, i. 233.
„ hilgendorfi, i. **232**; iv. 185.
„ leopoldianus, i. 235.
„ major, i. **237**; iv. 187.
„ modestus, i. 232.
„ occidentalis, i. 240.
„ pulcher, i. **237**; iv. 187.
„ septentrionalis, iv. 187.
„ spilopterus, i. **239**; iv. 187.
„ tangensis, i. 234.
„ ubalo, iv. 186.
„ woosnami, i. 239.
petherici (Anabas), iv. **61**, 64.
„ (Ctenopoma), iv. 61, 62, 64, 67.
„ (Marcusenius), i. **82**; iv. 162.
„ (Mugil), iv. 84.
Petrocephalus, i. **47**, 60.
„ affinis, i. 88.
„ ansorgii, i. **51**; iv. 154.
Petrocephalus ballayi, i. **52**; iv. 154.
„ bane, i. **48**; iv. 154.
„ bovei, i. 54.
„ catostoma, i. 56, **57**.
„ cunganus, iv. 155.
„ degeni, i. 58.
„ dejoannis, i. 48.
„ dequesne, i. 48.
„ ehrenbergii, i. 48.
„ gliroides, i. 58.
„ haullevillii, iv. 157.
„ isidori, i. 75.
„ keatingii, i. 55.
„ marchei, i. 64.
„ microphthalmus, iv. 155.
„ pictus, i. 113.
„ sauvagii, i. **49**; iv. 154.
„ simus, i. 53; iv. 155.
„ stuhlmanni, i. **56**; iv. 156.
Petrochromis, iii. 267.
„ andersonii, iii. 269.
„ nyassæ, iii. 272.
„ polyodon, iii. 270.
„ tanganicæ, iii. 268.
pfefferi (Barbus), ii. 117.
„ (Paratilapia), iii. 323.
„ (Synodontis), iv. 315.
Phago, i. 246.
„ boulengeri, i. **248**; iv. 189.
„ intermedius, i. 247.
„ loricatus, i. 247.
„ rostratus, i. **246**; iv. 189.
Phagrus, i. 142.
„ dorsalis, i. 142.
Phenacogrammus, i. 223.
philander (Chromis), iii. 300.
„ (Tilapia), iii. 300.
Phoxinellus, ii. 188.
Phractolæmidæ, i. 167.
Phractolæmus, i. 168.
„ ansorgii, i. 168.
Phractura, ii. 498.
„ ansorgii, ii. 504.
„ bovei, ii. 499.
„ brevicauda, ii. 502.
„ intermedia, ii. 503.
„ lindica, ii. 500.
„ longicauda, ii. 504.
„ scaphirhynchura, ii. 505.
Phyllonemus, ii. 349.

Phyllonemus typus, ii. 349.
physa (Tetrodon), iv. 143.
Physailia, ii. 300.
„ ansorgii, iv. 296.
„ occidentalis, iv. 296.
„ pellucida, ii. **300**; iv. 296.
„ somalensis, ii. 301.
„ villiersi, iv. 296.
pictus (Gnathonemus), i. 113.
„ (Petrocephalus), i. 113.
Pimelodus, ii. 353.
„ auratus, ii. 325.
„ balayi, ii. 373.
„ biscutatus, ii. 367.
„ clarias, ii. 404.
„ cranchii, ii. 332.
„ guirali, ii. 373.
„ guttatus, ii. 364.
„ laticeps, ii. 342.
„ membranaceus, ii. 474.
„ nigrodigitatus, ii. 321.
„ occidentalis, ii. 369.
„ platychir, ii. 357.
„ synodontis, ii. 469.
„ uranoscopus, ii. 355, 357.
pinguis (Engraulicypris), ii. 210.
pisonis (Eleotris), iv. 18.
plagiostoma (Marcusenius), i. 80.
Plagiostomi, i. 1.
plagiostomus (Barbus), ii. 68.
platycephalus (Clarias), ii. 241.
„ (Gobius), iv. 24.
platychir (Amphilius), ii. **357**, 360.
„ (Anoplopterus), ii. 357.
„ (Pimelodus), ii. 357.
Platygaster, i. 162.
„ indicus, i. 163.
platyrhinus (Barbus), ii. 76.
Platystachus, ii. 278.
„ anguillaris, ii. 278.
platystoma (Varicorhinus), iv. 220.
platystomus (Barbus), ii. 73.
Platytæniodus, iii. 426.
„ degeni, iii. 426.
playfairii (Haplochilus), iii. 51.
Plecodus, iii. 503.
„ bimaculatus, iii. 503.
„ paradoxus, iii. 503.
Plectognathi, iv. 142.
pleurogramma (Barbus), ii. 120.
pleuromelas (Chromis), iii. 169.
pleuromelas (Tilapia), iii. 169.
Pleuronectidæ, iv. 3.
pleuropholis (Barbus), ii. **175**; iv. 272.
pleurops (Eleotris), iv. 10.
„ (Synodontis), ii. **466**; 322.
pleurospilus (Pelmatochromis), iii. 423.
pleurostigma (Anabas), iv. 65.
„ (Lamprologus), iii. 473.
pleurotænia (Tilapia), iii. 247.
Pleurotremi, i. 1.
Plotosinæ, ii. 219.
Plotosus, ii. 278.
„ anguillaris, ii. **278**; iv. 290.
„ arab, ii. 279.
„ castaneus, ii. 279.
„ ikapor, ii. 278.
„ lineatus, ii. 278.
„ marginatus, ii. 278.
plumieri (Mugil), iv. 80.
poechii (Barbus), iv. 250.
Pœcilia bensonii, iii. 61.
„ calaritana, iii. 18.
„ fusca, iv. 21.
„ omalonota, iii. 50.
„ sexfasciata, iii. 56.
„ spilargyreia, iii. 55.
„ spilauchena, iii. 61.
poensis (Clarias), ii. 244.
polleni (Paratilapia), iii. 315.
pollinii (Ichthyocoris), iv. 109.
polyacanthus (Tilapia), iii. 247.
polyactis (Paretroplus), iii. 506.
polycentra (Chromis), iii. 190.
„ (Tilapia), iii. 190.
Polycentropsis, iii. 99.
„ abbreviata, iii. 100.
polydactylus (Galeoides), iv. 103.
„ (Polynemus), iv. 103.
polylepis (Barbus), ii. 21.
„ (Pelmatochromis), iii. 382.
„ (Stomatorhinus), i. 91.
Polynemidæ, iv. 100.
Polynemus, iv. 102.
„ artedii, iv. 100.
„ decadactylus, iv. 103.
„ enneadactylus, iv. 103.
„ macronemus, iv. 100.
„ polydactylus, iv. 103.
„ quadrifilis, iv. 102.
„ quinquarius, iv. 100
polyodon (Paratilapia), iii. 349.

polyodon (Pelmatochromis), iii. 407.
„ (Petrochromis), iii. 270.
„ (Synodontis), ii. 398.
Polypteridæ, i. 4.
Polypterus, i. 5.
„ ansorgii, iv. 149.
„ arnaudii, i. 14.
„ bichir, i. 6, 10, 14, 16; iv. 149.
„ büttikoferi, i. 16.
„ congicus, i. 9.
„ delhezi, i. 13.
„ endlicheri, i. 10; iv. 150.
„ lapradii, i. 7.
„ lowei, iv. 151.
„ ornatipinnis, i. 12.
„ palmas, i. 16; iv. 150.
„ retropinnis, i. 17.
„ senegalensis, i. 10, 14.
„ senegalus, i. 14; iv. 150.
„ weeksii, i. 11.
polyzona (Gobius), iv. 38.
pontica (Atherina), iv. 74.
poptæ (Alestes), i. 216.
Porcus auratus, ii. 325.
„ bayad, ii. 305.
„ docmac, ii. 308.
porocephaloides (Eleotris), iv. 15.
porocephalus (Eleotris), iv. 15.
„ (Ophiocara), iv. 15.
portali (Barbus), ii. 133; iv. 257.
potamogalis (Enteromius), ii. 156.
Pristidæ, i. 3.
Pristipoma, iii. 125.
„ jubelini, iii. 126.
„ macrophthalmum, iii. 130.
Pristipomatidæ, iii. 125.
Pristis, i. 3.
„ perroteti, i. 3; iv. 149.
proboscirostris (Mormyrus), i. 141.
Procatopus, iii. 78.
„ nototænia, iii. 79.
productus (Ambassis), iii. 112.
progenys (Barbus), ii. 102.
prognatha (Paratilapia), iii. 333.
Protomelus, i. 19.
Protopterus, i. 19.
„ æthiopicus, i. 21; iv. 152.
„ amphibius, i. 20.
„ anguilliformis, i. 20.
„ annectens, i. 20, 28; iv. 151.
Protopterus dolloi, i. 22; iv. 152.
„ rhinocryptis, i. 20.
proxima (Kuhlia), iii. 97.
Psettus, iii. 119.
„ argenteus, iii. 120, 121.
„ commersonii, iii. 120.
„ falciformis, iii. 120.
„ orbicularis, iii. 120.
„ rhombeus, iii. 122.
„ sebæ, iii. 122; iv. 327.
Pseudarius, ii. 383.
Pseudobarbus, ii. 1.
Pseudoplesiops, iii. 375.
„ nudiceps, iii. 375.
Pseudosynodontis, ii. 391.
„ serratus, ii. 457.
Pseudotolithus, iii. 117.
„ macrognathus, iii. 119.
„ typus, iii. 118.
psittacus (Marcusenius), i. 85.
„ (Mormyrus), i. 85.
Pterocapoëta, i. 352.
„ maroccana, i. 357.
Ptychochromis, iii. 138.
„ betsileanus, iii. 259.
„ grandidieri, iii. 258.
„ madagascariensis, iii. 258.
„ oligacanthus, iii. 258, 259.
pulchellus (Syngnathus), iii. 88.
pulcher (Auchenoglanis), ii. 373.
„ (Pelmatochromis), iii. 402; iv. 334.
„ (Petersius), i. 237.
pulverulentus (Marcusenius), i. 63.
pumilus (Barbus), ii. 186.
„ (Haplochilus), iii. 45.
punctata (Morone), iii. 103.
„ (Perca), iii. 102, 103.
„ (Sciæna), iii. 103.
punctatus (Auchenoglanis), ii. 376.
„ (Chrysichthys), ii. 334.
„ (Dicentrarchus), iii. 104.
„ (Labrax), iii. 103.
punctifer (Cobitis), iii. 13.
„ (Galaxias), iii. 13.
punctulata (Perca), iii. 103.
punctulatus (Stomatorhinus), i. 88; iv. 162.
„ (Synodontis), ii. 415.
Puntius, ii. 1.
„ ablabes, ii. 156.

Puntius camptacanthus, ii. 164, 166.
„ kessleri, ii. 138.
„ tholonianus, ii. 166.
„ trispilos, ii. 163.
„ vittatus, ii. 158.
purpurascens (Elops), i. 25.
pustulatus (Tetrodon), iv. 146.

quadrifilis (Polynemus), iv. 102.
„ (Trichiodon), iv. 102.
quadrilineatus (Neoborus), i. 251.
quadrimaculatus (Barbus), i. 351.
„ (Crossochilus), i. 351.
„ (Discognathus), i. 351.
„ (Gobio), i. 351.
quadripunctatus (Barbus), ii. 153.
quinquarius (Pentanemus), iv. 100.
„ (Polynemus), iv. 100.

radcliffii (Barbus), ii. **34**; iv. 226.
radians (Mugil), iv. 93.
radiatus (Barbus), ii. 155.
Rahad, ii. 512.
Raja torpedo, ii. 512.
ramada (Mugil), iv. 84.
rammelsbergii (Mugil), iv. 80.
rangii (Chromis), iii. 174.
„ (Tilapia), iii. 173.
rapax (Barbus), ii. **119**; iv. 251.
Rasbora, ii. 186.
„ zanzibarensis, ii. 187.
regani (Pelmatochromis), iii. 390.
reinii (Barbus), ii. 42.
rendalli (Chromis), iii. 190.
„ (Tilapia), iii. 190.
resupinatus (Synodontis), ii. 471.
reticulatus (Gobius), iv. 26.
„ (Lamprologus), iii. 482.
„ (Mastacembelus), iv. 134.
retrodens (Hemichromis), iii. 347.
„ (Paratilapia), iii. 347.
retropinnis (Polypterus), i. 17.
Rhinocryptis, i. 19.
„ amphibia, i. 20.
rhinocryptis (Protopterus), i. 20.
Rhinoglanis, ii. 492.
„ typus, ii. 493.
„ vannutellii, ii. 493.
rhinophorus (Barbus), iv. 238.
rhoadesii (Barbus), ii. 72.
„ (Chilotilapia), iii. 499.
„ (Paratilapia), iii. 361.
rhodesianus (Barbus), ii. 95.
rhodopleura (Alestes), i. 218.
rhodopterus (Gobius), iv. 26.
rhodostigma (Pelmatochromis), iii. 424.
rhombeus (Centrogaster), iii. 121.
„ (Centropodus), iii. 121.
„ (Chætodon), iii. 123.
„ (Gasterosteus), iii. 123.
„ (Monodactylus), iii. 122.
„ (Psettus), iii. 122.
„ (Scomber), iii. 121.
rhynchophorus (Gnathonemus), i. 121.
richardsonii (Mugil), iv. 86.
riggenbachi (Barbus), ii. 84.
riponianus (Pelmatochromis), iii. 411.
riqueti (Atherina), iv. 74.
risso (Atherina), iv. 74.
robbianus (Synodontis), ii. 433, **435**, 439; iv. 316.
robecchii (Clarias), ii. 232.
roberti (Astatotilapia), iii. 295.
„ (Haplochromis), iii. 295.
robinsoni (Barbus), iv. 241.
robusta (Paratilapia), iii. 328.
robustus (Hemichromis), iii. 328.
„ (Mugil), iv. 92.
rocadasi (Barbus), iv. 224.
„ (Labeo), iv. 203.
Roccus labrax, iii. 102.
rodericensis (Mugil), iv. 94.
rodolphi (Distichodus), i. 274.
rogersi (Barbus), ii. 180.
Rohitichthys, i. 300.
rolandi (Hemichromis), iii. 431.
rosæ (Barbus), iv. 239.
„ (Labeo), i. **312**; iv. 199.
rostrata (Tilapia), iii. 255.
rostratus (Distichodus), i. **275**; iv. 194.
„ (Paraphago), i. 244.
rothschildi (Barbus), ii. 83.
„ (Discognathus), i. 345.
rotundiceps (Gephyroglanis), ii. 352.
„ (Leptoglanis), ii. 352.
royauxi (Euchilichthys), ii. 488.
„ (Microthrissa), i. 161.
roylii (Barbus), iv. 233.
ruandæ (Varicorhinus), iv. 219.
ruasæ (Barbus), iv. 230.

rubromaculatus (Labeo), iv. 209.
rubropunctata (Tilapia), iii. 228.
rubropunctatus (Labeo), iv. 199.
ruddi (Labeo), i. **314**; iv. 199.
rueppelli (Barbus), ii. 25.
„ (Chrysichthys), ii. 327.
rufua (Barbus), iv. 256.
rukwaensis (Synodontis), ii. 415.
rume (Mormyrus), i. **140**; iv. 169.
rupestris (Centropomus), iii. 93.
„ (Dules), iii. 93.
„ (Kuhlia), iii. 93.
„ (Moronopsis), iii. 93.
„ (Paradules), iii. 93.
ruppellii (Alestes), i. 206.
„ (Brachyalestes), i. 206.
ruspolii (Barbus), ii. 28.
russelli (Gobius), iv. 24.
rutilus (Alestes), iv. 181.
ruwenzorii (Capoëta), iv. 222.
„ (Varicorhinus), iv. 222.

sabiensis (Barbus), iv. 244.
sacchii (Oxyglanis), ii. 369.
sadleri (Alestes), i. **200**; iv. 178.
Safole, iii. 92.
saharæ (Hemichromis), iii. 431.
salæ (Clarias), ii. **264**; iv. 288.
salahie (Mormyrus), i. 110.
Salar, i. 166.
„ macrostigma, i. 166.
Salarias, iv. 110.
„ monochrous, iv. 111.
„ varus, iv. 109.
salessii (Barbus), ii. **183**; iv. 272.
saliens (Mugil), iv. 85.
Salmo, i. 166.
„ ægyptiacus, i. 273, 275.
„ dentex, i. 180, 193, 195.
„ fario, i. 166.
„ lepasseti, i. 166.
„ macrostigma, i. 166.
„ niloticus, i. 273, 275.
„ odoë, i. 177.
„ trutta, i. 166.
salmo (Barbus), ii. 129.
salmonea (Lutodeira), i. 164.
salmoneus (Chanos), i. 164.
„ (Mugil), i. 164.
Salmonidæ, i. 165.
Salvelinus, i. 166.
samberanensis (Gobius), iv. 32.
Sandelia, iv. 48.
„ bainsii, iv. 52.
sandersi (Varicorhinus), iv. 217.
sandvicensis (Kuhlia), iii. 97.
„ (Moronopsis), iii. 96.
Sarcodaces, i. 177.
„ microlepis, i. 177.
„ odoë, i. **177**; iv. 175.
sarda (Atherina), iv. 74.
„ (Lebias), iii. 18.
sardella (Barilius), ii. 210.
„ (Engraulicypris), ii. 210.
sardinella (Atherina), iv. 74.
Sarotherodon, iii. 138.
„ melanotheron, iii. 176.
„ zillii, iii. 197.
saurus (Elops), i. 25.
sauvagii (Barbus), iv. 260.
„ (Ctenochromis), iii. 290.
„ (Kuhlia), iii. 93.
„ (Mormyrus), i. 49.
„ (Petrocephalus), i. **49**; iv. 154.
„ (Tilapia), iii. 290.
savorgnani (Atopochilus), ii. **490**; iv. 323.
scandens (Anabas), iv. 53.
scaphirhynchura (Doumea), ii. 505.
„ (Peltura), ii. 505.
„ (Phractura), ii. 505.
schall (Hemisynodontis), ii. 404.
„ (Silurus), ii. 404.
„ (Synodontis), ii. **404**; iv. 316.
schenga (Distichodus), i. 268.
Schilbe, ii. 293.
„ auratus, ii. 293.
„ auritus, ii. 298.
„ bouvieri, ii. 294.
„ congolensis, iv. 293.
„ dispila, ii. 293.
„ emini, ii. 296.
„ hasselquistii, ii. 283.
„ intermedius, ii. 293.
„ isidori, ii. 296.
„ marmoratus, iv. 294.
„ mystus, ii. 293; iv. 293.
„ senegalensis, ii. 294.
„ senegallus, ii. 293.
„ uranoscopus, ii. 296.
schilbeoides (Bagrus), ii. 283.

schilthuisiæ (Gnathonemus), i. 98.
schlegelii (Gobius), iv. 37.
„ (Mugil), iv. 96.
schoelleri (Haplochilus), iii. 65.
schoenleinii (Labrax), iii. 104.
schoutedeni (Alestes), iv. 182.
schubotzi (Haplochromis), iii. 288.
Schubotzia, iii. 500.
„ eduardiana, iii. 500.
schwebischi (Hemichromis), iii. 365, 398.
„ (Paratilapia), iii. 365.
Sciæna diacantha, iii. 102.
„ jarbua, iii. 113.
„ labrax, iii. 102.
„ punctata, iii. 103.
Sciænidæ, iii. 115.
sclateri (Gephyroglanis), ii. **346**; iv. 304.
„ (Mastacembelus), iv. 118.
Scoliostomus, i. 164.
Scomber falcatus, iv. 2.
„ rhombeus, iii. 121.
Scombresoces, iii. 14.
Scombresocidæ, iii. 14.
Scombriformes, iii. 90.
Scorpididæ, iii. 119.
Scrophicephalus, i. 126.
„ kannume, i. 134.
„ longipinnis, i. 136.
sebæ (Psettus), iii. **122**; iv. 327.
sector (Barbus), ii. 78.
seeberi (Barbus), iv. 241.
„ (Labeo), iv. 211.
seheli (Mugil), iv. 91.
Selachii, i. 1.
selti (Labeo), i. 317.
senegalensis (Alestes), i. **206**; iv. 179.
„ (Arelia), iv. 6.
„ (Barilius), ii. 204.
„ (Clarias), ii. **231**; iv. 281.
„ (Cynoglossus), iv. 6.
„ (Eleotris), iv. 18.
„ (Elops), iv. 152.
„ (Gnathonemus), i. 107, **103**; iv. 165.
„ (Haplochilus), iii. **71**, 72, 73.
„ (Heterobranchus), ii. 273.
„ (Labeo), i. **308**; iv. 198.
„ (Mormyrus), i. 108.
„ (Otolithus), iii. 118.
„ (Polypterus), i. 10, 14.
„ (Schilbe), ii. 294.
senegallus (Schilbe), ii. 293.
senegalus (Polypterus), i. **14**; iv. 150.
septentrionalis (Mugil), iv. 90.
„ (Petersius), iv. 187.
seraoi (Eutropius), iv. 292.
serra (Barbus), ii. 114; iv. 251.
Serranidæ, iii. 101.
serranus (Hemichromis), iii. 334.
„ (Paratilapia), iii. 333, **334**.
Serrasalmus citharus, i. 291.
serratus (Pseudosynodontis), ii. 457.
„ (Synodontis), ii. 433, **457**, 458.
serrifer (Barbus), ii. 124; iv. 253.
serrula (Barbus), iv. 259.
servus (Grammistes), iii. 114.
„ (Holocentrus), iii. 113.
„ (Therapon), iii. 114.
sethente (Alestes), i. 193.
setifensis (Barbus), ii. 110.
setipinnis (Megalops), i. 28.
setivimensis (Barbus), ii. **110**; iv. 251.
sexfasciata (Pœcilia), iii. 56.
„ (Tilapia), iii. 190.
sexfasciatus (Distichodus), i. 276.
„ (Epiplatys), iii. 54.
„ (Haplochilus), iii. **54**, 56.
sexradiatus (Barbus), ii. 128.
sharpii (Chrysichthys), ii. 318.
shirana (Tilapia), iii. 151.
shiranus (Corematodus), iii. 494.
„ (Mastacembelus), iv. **128**, 131.
„ (Oreochromis), iii. 151.
sianenna (Chrysichthys), ii. 317.
sicheli (Labeo), i. 339.
Sicydium, iv. 42.
„ acutipinnis, iv. 44.
„ brevifilis, iv. 43.
„ bustamantæi, iv. 46.
„ lagocephalum, iv. 45.
„ laticeps, iv. 44.
„ parvipinnis, iv. 45.
Sicyogaster, iv. 46.
Sicyopterus, iv. 42.
„ lagocephalus, iv. 45.
signatus (Mastacembelus), iv. 124.
sikoræ (Atherina), iv. 76.
Siluranodon, ii. 298.
„ auritus, ii. 298
Siluridæ, ii. 218.
Silurinæ, ii. 219.
Silurus anguillaris, ii. 226, 235.

Silurus auritus, ii. 298.
„ bajad, ii. 305, 308.
„ callarias, ii. 469.
„ clarias, ii. 469.
„ congensis, ii. 281.
„ docmak, ii. 308.
„ electricus, ii. 512.
„ gariepinus, ii. 228.
„ mystus, ii. 293.
„ schall, ii. 404.
sima (Xenotilapia), iii. 452.
Simochromis, iii. 274.
„ diagramma, iii. 275.
simotes (Tilapia), iii. 242.
simus (Mormyrus), i. 53.
„ (Petrocephalus), i. **53**; iv. 155.
singa (Haplochilus), iii. 78.
singularis (Stappersia), iii. 450.
sinuosa (Perca), iii. 102.
sirenoides (Mormyrops), i. 39.
sjoestedti (Fundulus), iii. **38**; iv. 325.
Slatinia, ii. 510.
„ mongallensis, ii. 510.
smithii (Chromys), iii. 357.
„ (Clarias), ii. 232.
„ (Doryichthys), iii. 83.
„ (Mugil), iv. 84, 94.
„ (Paratilapia), iii. 357.
„ (Spirobranchus), iv. 53.
„ (Synodontis), ii. 404.
smiti (Synodontis), ii. 461.
soaresi (Eleotris), iv. 21.
Solenomormyrus, i. 126.
soloni (Synodontis), ii. 445.
somalensis (Ailia), ii. 301.
„ (Physailia), ii. 301.
somereni (Barbus), iv. 229.
soporator (Gobius), iv. 33.
sorex (Synodontis), ii. **465**; iv. 322.
Sparidæ, iii. 132.
sparmanni (Chromis), iii. 171, 206.
sparrmani (Tilapia), iii. 206.
sparsidens (Tilapia), iii. 303.
Sparus, iii. 132.
„ desfontainii, iii. 302.
„ galilæus, iii. 169.
„ vagus, iii. 132.
Spathodus, iii. 496.
„ erythrodon, iii. 496.
spectabilis (Gobius), iv. 24.
spekii (Kneria), i. **171**; iv. 174.
spekii (Pelmatochromis), iii. 416.
Sphagebranchus, iii. 10.
„ buettikoferi, iii. 10.
„ cephalopeltis, iii. 10.
sphecodes (Marcusenius), i. 66.
„ (Mormyrus), i. 66.
sphekodes (Mormyrops), i. 66.
Sphyræna, iv. 105.
„ afra, iv. 105.
„ dubia, iv. 105.
„ guachancho, iv. 105.
„ guentheri, iv. 105.
„ jello, iv. 105.
Sphyrænidæ, iv. 105.
spilargyreia (Pœcilia), iii. 55.
spilargyreus (Haplochilus), iii. 72.
spilauchen (Haplochilichthys), iii. 61.
„ (Haplochilus), iii. **61**; iv. 325.
spilauchena (Pœcilia), iii. 61.
spilopterus (Citharichthys), iv. 4.
„ (Petersius), i. 239.
spilotænia (Neolebias), iv. 192.
spilurus (Chromis), iii. 162.
„ (Xenocharax), i. **287**; iv. 197.
Spirobranchus, iv. 48.
„ bainsii, iv. 52.
„ capensis, iv. 50.
„ smithii, iv. 53.
splendens (Alestes), i. 195.
„ (Kuhlia), iii. 97.
sprattus (Clupea), i. 154.
spurrelli (Barbus), iv. 264.
„ (Fundulus), iii. 27.
squamiceps (Nannochromis), iii. 376.
squamipinnis (Chromis), iii. 183.
„ (Tilapia), iii. 183.
squamosissimus (Barbus), iv. 258.
stampflii (Hemirhombus), iv. 4.
stanleyanus (Gnathonemus), i. **107**; iv. 165.
„ (Mormyrus), i. 107.
stanleyi (Haplochromis), iii. 295.
„ (Tilapia), iii. 295.
Stappersia, iii. 450.
„ singularis, iii. 450.
stappersii (Luciolates), iii. 110.
„ (Mastacembelus), iv. 137.
„ (Pelmatochromis), iii. 423.
Steatocranus, iii. 283.
„ gibbiceps, iii. 283.
steindachneri (Barbus), iv. 218.

steindachneri (Barilius), ii. **197**; iv. 275.
„ (Labeo), i. 317.
„ (Lamprologus), iii. 471.
„ (Synodontis), iv. 318.
„ (Tilapia), iii. 209.
„ (Varicorhinus), iv. 218.
stenningi (Labeo), iv. 208.
stenosoma (Paratilapia), iii. 369.
stenostoma (Varicorhinus), iv. 215.
stephensoni (Barilius), iv. 276.
sterneckii (Kuhlia), iii. 95.
stictolepis (Labeo), iv. 199.
stigmatogenys (Tilapia), iii. 226.
stigmatopygus (Barbus), ii. **185**; iv. 274.
stoliczkanus (Cyprinodon), iii. 20.
Stomatorhinus, i. 87.
„ corneti, i. 90.
„ humilior, i. 89.
„ microps, i. **92**; iv. 162.
„ polylepis, i. 91.
„ puncticulatus, i. **88**; iv. 162.
„ walkeri, i. 88.
stormsi (Micralestes), i. 225.
„ (Tilapia), iii. 227.
striatus (Haplochilus), iii. 60.
strigigena (Ctenochromis), iii. 299.
„ (Haplochromis), iii. 299.
„ (Tilapia), iii. 251.
strigosus (Tetrodon), iv. 143.
Stromatoidea, iii. 119.
„ layardi, iii. 120.
stuhlmanni (Alestes), i. 199.
„ (Petrocephalus), i. **56**; iv. 156.
submarginatus (Clarias), ii. **245**; iv. 283.
subocellatus (Hemichromis), iii. 399.
„ (Pelmatochromis), iii. 399.
subocularis (Chromis), iii. 222, 249.
Sudis, i. 149.
„ adansonii, i. 149.
„ niloticus, i. 149.
sujefianus (Blennius), iv. 108.
superficialis (Myxus), iv. 82.
surkis (Barbus), ii. 65.
swanenburgi (Mormyrus), i. 32.
swierstræ (Barbus), iv. 245.
swynnertoni (Tilapia), iii. 219.
Symbranchidæ, iii. 1.
Symbranchii, iii. 1.
Symbranchus, iii. 1.
„ afer, iii. 2.
Syngnathidæ, iii. 81.
Syngnathus, iii. 86.
„ algeriensis, iii. 88.
„ ansorgii, iii. 87.
„ argus, iii. 85.
„ fluviatilis, iii. 82.
„ kaupi, iii. 86.
„ leiaspis, iii. 85.
„ pulchellus, iii. 88.
„ zambesensis, iii. 82.
Synodontis, ii. 391.
„ acanthomias, ii. **400**; iv. 315.
„ afro-fischeri, ii. **425**, 452.
„ alberti, ii. **454**; iv. 321.
„ angelicus, ii. **440**; iv. 320.
„ annectens, iv. 322.
„ ansorgii, iv. 317.
„ arabi, ii. 404.
„ batensoda, ii. **472**; iv. 323.
„ batesii, ii. **455**; iv. 321.
„ budgetti, ii. 403.
„ caudalis, ii. 397.
„ caudovittatus, ii. 412.
„ citernii, ii. 410.
„ clarias, ii. 404, **469**; iv. 322.
„ courteti, ii. **441**; iv. 320.
„ decorus, ii. **468**; iv. 322.
„ depauwi, ii. 438.
„ eupterus, ii. 427.
„ eurystomus, ii. 479.
„ filamentosus, ii. 460.
„ frontosus, ii. 410.
„ fuelleborni, ii. 427.
„ gambiensis, ii. **407**, 415; iv. 316.
„ geledensis, ii. **458**; iv. 322.
„ granulosus, ii. 413.
„ greshoffi, ii. 452.
„ guentheri, ii. 474.
„ guttatus, ii. 436, **447**.
„ haugi, ii. 436.
„ humeratus, ii. 430.
„ iturii, iv. 316.
„ labeo, ii. **449**, 450.
„ leopardinus, iv. 320.
„ longirostris, ii. 448.
„ macrodon, ii. 469.
„ macrostigma, ii. **432**; iv. 318.
„ maculatus, ii. 462.
„ maculosus, ii. 404.
„ marmoratus, ii. 425.

Synodontis melanogaster, ii. 473.
„ melanopterus, ii. 431.
„ melanostictus, ii. **418**; iv. 316.
„ membranaceus, ii. 472, **474**; iv. 323.
„ multimaculatus, ii. 419.
„ multipunctatus, ii. 420.
„ nebulosus, ii. 423.
„ nigrita, ii. **429**; iv. 316.
„ nigromaculatus, ii. 416.
„ notatus, ii. 462.
„ nummifer, ii. **463**; iv. 322.
„ nyassæ, ii. 415.
„ obesus, ii. **433**; iv. 318.
„ ocellifer, ii. **409**; iv. 316.
„ omias, ii. 400, **401**.
„ ornatipinnis, ii. 444.
„ ornatus, iv. 316.
„ pardalis, ii. **442**; iv. 320.
„ pfefferi, iv. 315.
„ pleurops, ii. **466**; iv. 322.
„ polyodon, ii. 398.
„ punctulatus, ii. 415.
„ resupinatus, ii. 471.
„ robbianus, ii. 433, **435**, 439; iv. 318.
„ rukwaensis, ii. 415.
„ schall, ii. **404**; iv. 316.
„ serratus, ii. 433, **457**, 458.
„ smithii, ii. 404.
„ smiti, ii. 461.
„ soloni, ii. 445.
„ sorex, ii. **465**; iv. 322.
„ steindachneri, iv. 318.
„ tessmanni, iv. 321.
„ tholloni, ii. 439.
„ vaillanti, ii. 450.
„ victoriæ, ii. **421**; iv. 316.
„ woosnami, ii. 424.
„ xiphias, ii. 451.
„ zambesensis, ii. **415**; iv. 316.
„ zanzibaricus, ii. 415.
synodontis (Pimelodus), ii. 469.
syriacus (Clarias), ii. 235.
Systomus, ii. 1.
„ beso, i. 356.

tænia (Nannocharax), i. **286**; iv. 195.
tæniata (Alestes), i. 209.
tæniatus (Mastacembelus), iv. 138.
tæniatus (Pelmatochromis), iii. **401**, 407.
tæniopygus (Fundulus), iii. 34, 35, **37**.
„ (Nothobranchius), iii. 37.
tæniura (Kuhlia), iii. 95.
tæniurus (Alestes), i. 214.
„ (Barbus), ii. 165.
„ (Lamprologus), iii. 480.
„ (Moronopsis), iii. 95.
„ (Paradules), iii. 95.
taitensis (Barbus), ii. 117.
tajasica (Gobius), iv. 31.
tamandua (Campylomormyrus), i. 118.
„ (Gnathonemus), i. **118**; iv. 167.
„ (Mormyrus), i. 118.
tanensis (Barbus), ii. 56, **58**, 66.
tang (Mugil), iv. 80.
tanganicæ (Barilius), ii. 207.
„ (Capoëta), i. 358.
„ (Chromis), iii. 268.
„ (Mastacembelus), iv. 138.
„ (Petrochromis), iii. 268.
„ (Tilapia), iii. 268.
„ (Varicorhinus), i. 358.
tanganicana (Mohanga), iii. 80.
tanganicanus (Auchenoglanis), ii. 369.
„ (Haplochilus), iii. 80.
„ (Lamprichthys), iii. 80.
„ (Marcusenius), i. 81.
tangensis (Petersius), i. 235.
tapirus (Mormyrus), i. 133.
Tarpon, i. 27.
tchadiensis (Auchenoglanis), ii. 369.
Teleostei, i. 23.
Teleostomi, i. 4.
telfairii (Agonostomus), iv. 99.
Tellia, iii. 22.
„ apoda, iii. 22.
Telmatochromis, iii. 485.
„ temporalis, iii. 485.
„ vittatus, iii. 487.
temporalis (Telmatochromis), iii. 485.
tenuicauda (Hyperopisus), i. **142**; iv. 170.
„ (Mormyrus), i. 53.
„ (Paraphractura), ii. 506.
tenuirostris (Labeo), i. 340.
„ (Mormyrus), i. 134.
tenuis (Belonoglanis), ii. 509.
teraia (Trachinotus), iv. 2.
tersquamatus (Hemichromis), iii. 388.
tessmanni (Alestes), iv. 178.

tessmanni (Synodontis), iv. 321.
Tetrabranchus, iii. 1.
tetracanthus (Lamprologus), iii. 463.
tetraspilus (Barbus), ii. 127.
tetrastigma (Barbus), iv. 267.
„ (Chromis), iii. 250.
„ (Tilapia), iii. 250.
Tetrodon, iv. 142.
„ fahaka, iv. 143.
„ leiogaster, iv. 146.
„ lineatus, iv. 143.
„ mbu, iv. 145.
„ miurus, iv. 147.
„ physa, iv. 143.
„ pustulatus, iv. 146.
„ strigosus, iv. 143.
Tetrodontidæ, iv. 142.
thebensis (Barilius), ii. 193.
„ (Leuciscus), ii. 193.
„ (Opsarius), ii. 193.
theodoræ (Clarias), ii. 232; iv. 288.
Therapon, iii. 113.
„ jarbua, iii. 113.
„ servus, iii. 114.
„ timoriensis, iii. 114.
„ trivittatus, iii. 114.
thikensis (Barbus), ii. 120.
tholloni (Alestes), i. 201.
„ (Chromis), iii. 202.
„ (Synodontis), ii. 439.
„ (Tilapia), iii. 202.
tholonianus (Puntius), ii. 166.
thomasi (Gnathonemus), iv. 165.
„ (Gobius), iv. 336.
„ (Notoglanidium), iv. 313.
„ (Paratilapia), iv. 331.
thonneri (Chrysichthys), iv. 303.
thumbergi (Chromys), iii. 328.
thumbergii (Paratilapia), iii. 328; iv. 330.
tiberiadis (Chromis), iii. 169.
Tilapia, iii. 138, 284.
„ acuticeps, iii. 218.
„ adolphi-frederici, iii. 220.
„ affinis, iii. 190.
„ alcalica, iii. 188.
„ amphimelas, iii. 188.
„ andersonii, iii. 171.
„ ansorgii, iii. 214.
„ aurata, iii. 246.
„ auromarginata, iii. 180.
„ bayoni, iii. 240.
Tilapia betsileana, iii. 259.
„ bilineata, iii. 204.
„ boops, iii. 265.
„ boulengeri, iii. 182.
„ brevimanus, iii. 196.
„ brevis, iii. 262.
„ buettikoferi, iii. 214; iv. 330.
„ burtoni, iii. 217.
„ busumana, iii. 197.
„ cabræ, iii. 194.
„ calliptera, iii. 222.
„ caudomarginata, iv. 327.
„ christyi, iii. 204.
„ crassa, iii. 205.
„ dardennii, iii. 256.
„ desfontainesi, iii. 302.
„ dolloi, iii. 184.
„ dubia, iii. 189.
„ dumerilii, iii. 155.
„ eduardiana, iii. 166.
„ fasciata, iii. 215.
„ flavii-josephi, iii. 303.
„ flavomarginata, iii. 171.
„ fouloni, iii. 206.
„ fuellebornii, iii. 222.
„ galilæa, iii. 167, 169; iv. 327.
„ giardi, iii. 221.
„ grahami, iii. 211.
„ grandidieri, iii. 258.
„ grandoculis, iii. 266.
„ guiarti, iii. 336.
„ guineensis, iii. 201.
„ haugi, iii. 178.
„ heudeloti, iii. 173; iv. 327.
„ horii, iii. 228.
„ humilior, iii. 230.
„ humilis, iii. 213.
„ hunteri, iii. 149.
„ inornata, iii. 263.
„ jallæ, iii. 213.
„ johnstonii, iii. 249, 250.
„ kafuensis, iii. 153.
„ kirkii, iii. 251.
„ kottæ, iii. 200.
„ labiata, iii. 280.
„ lacrimosa, iii. 234.
„ lata, iii. 190.
„ lateralis, iii. 169.
„ lateristriga, iii. 253.
„ latifrons, iii. 190.
„ lepidura, iii. 181.

Tilapia lethrinus, iii. 254.
,, linnelli, iii. 159.
,, livingstonii, iii. 243.
,, lucullæ, iii. 224.
,, macrocentra, iii. 169.
,, macrocephala, iii. **176**; iv. 328.
,, macrochir, iii. 160.
,, macrophthalma, iii. 261.
,, macrops, iii. 238.
,, madagascariensis, iii. 258.
,, manyaræ, iii. 187.
,, margaritacea, iv. 329.
,, mariæ, iii. 186.
,, martini, iii. 239.
,, meeki, iii. 194.
,, melanopleura, iii. **190**; iv. 329.
,, menzalensis, iii. 197.
,, microcephala, iii. 174.
,, microlepis, iii. 370.
,, monteiri, iii. 215.
,, mossambica, iii. **154**; iv. 327.
,, multifasciata, iii. 175.
,, natalensis, iii. **157**; iv. 327.
,, ngomensis, iii. 178.
,, nigra, iii. 152.
,, nigricans, iii. 241.
,, nigripinnis, iii. 173.
,, nilotica, iii. **162**; iv. 327.
,, nubila, iii. 235.
,, nuchisquamulata, iii. 290.
,, nyirica, iii. 162.
,, obliquidens, iii. 290.
,, oligacanthus, iii. 258.
,, ovalis, iii. 208.
,, oxyrhynchus, iii. 489.
,, pallida, iii. 231.
,, pappenheimi, iii. 232.
,, pectoralis, iii. 237.
,, percivali, iii. 210.
,, perrieri, iii. 229.
,, philander, iii. 300.
,, pleuromelas, iii. 169.
,, pleurotænia, iii. 247.
,, polyacanthus, iii. 247.
,, polycentra, iii. 190.
,, rangii, iii. 173.
,, rendalli, iii. 190.
,, rostrata, iii. 255.
,, rubropunctata, iii. 228.
,, sauvagii, iii. 290.
,, sexfasciata, iii. 190.
Tilapia shirana, iii. 151.
,, simotes, iii. 242.
,, sparrmani, iii. 206.
,, sparsidens, iii. 303.
,, squamipinnis, iii. 183.
,, stanleyi, iii. 295.
,, steindachneri, iii. 209.
,, stigmatogenys, iii. 226.
,, stormsii, iii. 227.
,, strigigena, iii. 251.
,, swynnertoni, iii. 219.
,, tanganicæ, iii. 268.
,, tetrastigma, iii. 250.
,, tholloni, iii. 202.
,, trematocephala, iii. 264.
,, tristrami, iii. 197.
,, uniformis, iii. 295.
,, variabilis, iii. 167.
,, vorax, iii. 156.
,, williamsii, iii. 225.
,, woosnami, iii. 212.
,, zebra, iii. 244.
,, zillii, iii. **197**; iv. 329.
tilhoi (Gephyroglanis), ii. 348; iv. 305.
timoriensis (Therapon), iii. 114.
toddi (Paratilapia), iii. 327.
tohizonæ (Eleotris), iv. 12.
toppini (Barbus), iv. 274.
tornieri (Varicorhinus), i. 355.
torpedo (Raja), ii. 512.
touteei (Distichodus), i. 271.
Trachinotus martini, iv. 2.
,, maxillosus, iv. 2, 3.
,, myrias, iv. 3.
,, teraia, iv. 2.
Trachyglanis, ii. 507.
,, minutus, ii. 509.
Trachynotus, iv. 1.
,, falcatus, iv. 2.
,, goreensis, iv. 3.
,, ovatus, iv. 2.
transvaalensis (Labeo), iv. 199.
Trematocara, iii. 455.
,, marginatum, iii. 455.
,, nigrifrons, iii. 456.
,, unimaculatum, iii. 457.
trematocephala (Tilapia), iii. 264.
Trembleur, ii. 512.
tretocephalus (Lamprologus), iii. 466.
trevelyani (Barbus), ii. **143**; iv. 259.
Tribranchus anguillaris, iii. 6.

Trichiodon, iv. 102.
„ quadrifilis, iv. 102.
trichomycteroides (Paramphilius), ii. 363.
trilineatus (Neolebias), i. 257.
trimaculatus (Barbus), ii. **103**, 105, 153; iv. 250.
„ (Myxus), iv. 91.
trispilomimus (Barbus), ii. **183**; iv. 272.
trispilopleura (Barbus), ii. 169, **172**; iv. 269.
trispilos (Puntius), ii. 163.
trispilus (Barbus), ii. **163**; iv. 267.
trispinosus (Mastacembelus), iv. 137.
tristrami (Chromis), iii. 197, 201.
„ (Haligenes), iii. 197.
„ (Tilapia), iii. 197.
tritæniatus (Nannæthiops), iv. 190.
trivittatus (Coius), iii. 114.
„ (Therapon), iii. 114.
Tropheus, iii. 276.
„ annectens, iii. 278.
„ moorii, iii. 276.
tropidolepis (Barbus), ii. 20.
troschelii (Mugil), iv. 94.
Trutta, i. 166.
trutta (Salmo), i. 166.
tsanensis (Clarias), ii. 239.
tuckeyi (Mormyrops), i. 32.
„ (Mormyrus), i. 32.
tumbanus (Lamprologus), iii. 465.
tumifrons (Marcusenius), i. 79.
Tylognathus, i. 300.
„ cantini, i. 331.
„ montanus, i. 331.
typica (Doumea), ii. 496.
typus (Apocheilichthys), iii. 61.
„ (Gymnallabes), ii. **270**; iv. 289.
„ (Paracara), iii. 315.
„ (Paratilapia), iii. 315.
„ (Phyllonemus), ii. 349.
„ (Pseudotolithus), iii. 118.
„ (Rhinoglanis), ii. 493.

ubalo (Petersius), iv. 186.
ubangensis (Auchenoglanis), ii. 375.
„ (Bagrus), ii. **313**; iv. 298.
„ (Barilius), ii. 200.
„ (Mastacembelus), iv. 132.
uellensis (Eleotris), iv. 13.
Umbla, i. 166.
umbratus (Abrostomus), i. 339.
„ (Labeo), i. **339**; iv. 208.
Unibranchapertura, iii. 1.
unifasciatus (Neolebias), i. 256.
uniformis (Tilapia), iii. 295.
unimaculatum (Trematocara), ii. 457.
unitæniatus (Barbus), ii. **158**; iv. 266.
„ (Nannæthiops), i. 254.
uranoscopus (Amphilius), ii. **354**, 355, 357.
„ (Anoplopterus), ii. 354.
„ (Pimelodus), ii. 355, 357.
„ (Schilbe), ii. 296.
urostigma (Bagrus), ii. **312**; iv. 298.
urotænia (Barbus), iv. 262.
„ (Micralestes), i. 228.
usambaræ (Barbus), ii. 149.
ussheri (Gnathonemus), i. 116.
„ (Mormyrus), i. 116.

vagus (Chrysophrys), iii. 132.
„ (Sparus), iii. 132.
vaigiensis (Mugil), iv. 97.
vaillanti (Cœlonotus), iii. 85.
„ (Hemistichodus), i. 253.
„ (Mormyrops), i. 43.
„ (Synodontis), ii. 450.
vanicolensis (Dules), iii. 93.
vannutellii (Rhinoglanis), ii. 493.
variabilis (Tilapia), iii. 167.
Varicorhinus, i. **352**; iv. 212.
„ ansorgii, i. 353.
„ beso, i. 356.
„ brucii, i. **354**; iv. 214.
„ ensifer, iv. 214.
„ latirostris, iv. 220.
„ maroccanus, i. 357.
„ nasutus, iv. 247.
„ neelspruitensis, iv. 221.
„ platystoma, iv. 220.
„ ruandæ, iv. 219.
„ ruwenzorii, iv. 222.
„ sandersi, iv. 217.
„ steindachneri, iv. 217.
„ stenostoma, iv. 215.
„ tanganicæ, i. 358.
„ tornieri, i. 355.
„ varicostoma, iv. 216.
varicorhinus (Labeo), i. 356.
varicostoma (Varicorhinus), iv. 216.

variegata (Labeo), i. 326.
varus (Blennius), iv. 109.
„ (Ichthyocoris), iv. 109.
„ (Salarias), iv. 109.
velifer (Labeo), i. 315.
ventralis (Paratilapia), iii. 365.
venustus (Haplochromis), iii. 287.
vergeri (Gobius), iv. 32.
vicinus (Anabas), iv. 51.
victoriæ (Barbus), ii. **96**; iv. 244.
„ (Mastacembelus), iv. 131.
„ (Synodontis), ii. **421**; iv. 316.
victoriana (Paratilapia), iii. 341.
victorianus (Labeo), i. **322**, 323; iv. 202.
villiersi (Physailia), iv. 296.
vinciguerræ (Clarias), ii. 234.
„ (Discognathus), i. 347.
vinciguerrai (Barbus), ii. 115.
virescens (Anguilla), iii. 6, 9.
„ (Muræna), iii. 9.
vittata (Ansorgia), iv. 295.
„ (Eleotris), iv. 18.
„ (Paratilapia), iii. 330.
vittatus (Bathybates), iii. 440.
„ (Hydrocyon), i. 182, 184.
„ (Puntius), ii. 158.
„ (Telmatochromis), iii. 487.
vittiger (Hydrocyon), i. 184.
viviparus (Barbus), ii. **170**; iv. 269.
voltæ (Hemichromis), iii. 388.
vorax (Chromis), iii. 156.
„ (Pellonula), i. 156.
„ (Tilapia), iii. 156.
vulgaris (Alausa), i. 154.
„ (Anguilla), iii. 4.
„ (Blennius), iv. 109.
„ (Labeo), i. 304.
„ (Labrax), iii. 102.
vulnerata (Gnathendalia), ii. 148.
vulneratus (Barbus), ii. **148**; iv. 261.

wagenaari (Chrysichthys), ii. 331.
waldoi (Barbus), ii. 86.
„ (Capoëta), ii. 86.
walkeri (Barbus), ii. 164.
„ (Chrysichthys), ii. **324**; iv. 301.
„ (Clarias), ii. **248**; iv. 284.
„ (Fundulus), iii. 32.
„ (Labeo), i. 324.
„ (Mormyrus), i. 88.
walkeri (Notoglanidium), ii. 377.
„ (Stomatorhinus), i. 88.
weeksii (Anabas), iv. 65, 67.
„ (Barilius), ii. 195.
„ (Ctenopoma), iv. 65.
„ (Labeo), i. **310**; iv. 198.
„ (Marcusenius), i. 71.
„ (Polypterus), i. 11.
wellmani (Barbus), ii. 137.
welwitschii (Barbus), ii. 115.
„ (Pelmatochromis), iii. 397.
werneri (Barbus), ii. 168.
„ (Clarias), ii. **254**; iv. 284.
weynsii (Barilius), ii. 198.
williamsi (Chromis), iii. 225.
williamsii (Tilapia), iii. 225.
wilverthi (Marcusenius), i. 86.
wingatii (Paratilapia), iii. 303.
woosnami (Petersius), i. 239.
„ (Synodontis), ii. 424.
„ (Tilapia), iii. 212.
wurtzi (Barbus), ii. 99.
wysti (Alestes), i. 195.

Xenocharax, i. 287.
„ crassus, i. 288.
„ spilurus, i. **287**; iv. 197.
Xenochromis, iii. 501.
„ hecqui, iii. 502.
xenodon (Clarias), ii. 235.
xenodonta (Bayonia), iii. 488.
xenognathus (Leptoglanis), ii. 351.
Xenomystus, i. 147.
„ nigri, i. **147**; iv. 170.
„ nili, i. 147.
Xenopomatichthys, i. 172.
„ ansorgii, iv. 174.
„ auriculatus, i. **172**; iv. 174.
Xenopomichthys, i. 172.
Xenopterus, iv. 148.
Xenotilapia, iii. 451.
„ ornatipinnis, iii. 453.
„ sima, iii. 452.
xiphias (Synodontis), ii. 451.
Xiphorhamphus, i. 177.
„ odoë, i. 177.
Xiphorhynchus, i. 177.
„ odoë, i. 177.

yseuxi (Bryconæthiops), i. **189**; iv. 176.

zambauenje (Mormyrops), i. 32.
„ (Mormyrus), i. 32.
zambesensis (Barbus), ii. 91.
„ (Barilius), ii. 198.
„ (Belonichthys), iii. 82.
„ (Carcharias), i. 2.
„ (Leuciscus), ii. 198.
„ (Syngnathus), iii. 82.
„ (Synodontis), ii. **415**; iv. 316.
zambezense (Opsaridion), ii. 198.
zambezensis (Labeobarbus), ii. 91.
zanclirostris (Mormyrops), i. **40**; iv. 154.
„ (Mormyrus), i. 40.
zanzibarensis (Rasbora), ii. 187.
zanzibaricus (Barbus), ii. **136**; iv. 257.
„ (Synodontis), ii. 415.
zaphiri (Barbus), ii. 74.
zebra (Tilapia), iii. 244.
zebratus (Cobitis), iii. 12.
„ (Galaxias), iii. 12.
Zenarchopterus, iii. 16.
„ dispar, iii. 16.
Zeorhombi, iii. 90.
zillii (Acerina), iii. 197.
„ (Chromis), iii. 197.
„ (Coptodon), iii. 197.
„ (Glyphisodon), iii. 197.
„ (Sarotherodon), iii. 197.
„ (Tilapia), iii. **197**; iv. 329.
zuaicus (Barbus), ii. 64.
zuluensis (Barbus), iv. 223.

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